



Additional Chart Coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 8 — CHART INFORMATION

SECTOR 8

ESTRECHO DE MAGALLANES

Plan.—This sector describes the Estrecho de Magallanes (Strait of Magellan), from its E entrance between Punta Dungeness and Cabo Espiritu Santo, W to its W entrance between Cabo Victoria and Cabo Pilar, 28 miles SSE. The distance between the E and W entrances of the strait, through the various channels, is 310 miles.

Bays and anchorages are described in the order in which they are approached from E to W.

General Remarks

8.1 Winds—Weather.—In the vicinity of the E entrance to Estrecho de Magallanes some 60 to 70 percent of the winds have a W component, while 10 to 15 percent or more are from the N and 6 to 10 percent or more are from the S. The mean velocity in this area is 15 knots.

In this area gales of Beaufort force 8 (34 knots) and higher have been reported on 7 percent of the observations for the year, and there is little change in expectancy from winter to summer. The gale winds are variable, covering all points between S through W to NE. In summer and autumn those from SW and W are most common.

Sustained gales are found in that part of Estrecho de Magallanes immediately W of Cabo Froward and in the larger expanses of water between the cape and Cabo Virgenes. In general gales here are less steady in direction than those of the open ocean.

At the Pacific entrance to Estrecho de Magallanes the prevailing winds are NW and frequently stormy. Easterly winds usually bring fair weather but are infrequent.

At Los Evangelistas more than 50 percent of the winds are from W and NW, while nearly 30 percent are from S and SW.

The mean wind velocity is 16 to 17 knots it has been reported to attain a speed of 100 miles an hour.

After a strong blow from NW a sudden shift to W with increased intensity, squalls and rain is likely, accompanied in coastal waters by a high cross sea. Then they may shift to S and moderate. But here the S winds are rather uncommon and like the still rarer E winds, are accompanied by rising pressure and fine weather. Northerly gales gives ample warning of their approach through light winds, an overcast sky, exceptionally good visibility, and a falling barometer.

When passing through the strait, an entire change in the features of the country and probably in the weather will be experienced in its various parts.

From its E entrance to Cabo Porpesse, 100 miles WSW, the land is comparatively low and covered with grass, but no trees are visible.

All over this E portion of the strait the most remarkable difference takes place in the appearance of the land according to the conditions of the light in which it is seen.

In the vicinity of Cabo Porpesse, the land becomes wooded and its elevation gradually increases.

The forest becomes more dense and the mountains more lofty as Cabo Froward is approached. These characteristics continue as far as the E part of Paso Largo.

From here, though the mountains still border the strait, the trees become smaller, until towards the W entrance of the strait the shores are bare and rocky, only the ravines showing a stunted, though dense, vegetation.

East of Cabo Froward, the land is comparatively level compared to that W of the cape where there are steep mountains, bare on the upper parts, but covered with thick moss or dense forest on the lower slopes.

The passage through Estrecho de Magallanes is safe, but vigilance and caution are necessary. The difficulties and dangers in navigating the strait in either direction are the same that are experienced in narrow channels and close harbors of the same latitude elsewhere.

If the weather is thick, as is likely to be the case for most periods, the passage is rendered more difficult because of incomplete surveys, the lack of aids to navigation, the distance between anchorages, the lack of good anchorages, the strong currents, and in some cases the narrow limit for maneuvering.

The difference in the duration of daylight in summer and winter forms an important consideration. In December, there is daylight from 0230 until 2030, while in June, daylight will be limited from 0800 to 1600.

For some, night is preferred to daylight for navigating Primera Angostura and Segunda Angostura, as the lights are more discernible than the beacons and other marks on land.

Paso Tortuoso is navigated day and night by all regular trading vessels. Without local knowledge there is some risk in passing through this part of the strait because of the strong tidal currents and the probability of thick weather, either in the form of snow or rain.

Anchorage should be found before nightfall, but large vessels bound W, with good radar, can safely remain underway in Paso Anchor during night and await daylight for the passage of Paso Tortuoso.

Violent and unpredictable squalls are frequent all over the strait. Sustained gales are seldom encountered except in the widest entrances and passages.

In many of the countless narrow passages the wind follows the run of the passage, and has only two possible directions. It may be reversed abruptly when there has been a large shift of wind direction over the open sea.

The most dangerous winds are the violent and unpredictable squalls. The occurrence of one or more of these in succession from the same direction is no indication that the next will not be from some widely different direction. Moreover, of two possible anchorages a few miles apart, the more open may be less subject to these squalls.

These squalls depend largely, if not entirely, on the existence of strong winds or gales at sea or at a height of several thousand meters over land.

As these winds strike the rugged mountains of the archipelagos, they set up eddies of varying size and intensity. In a sheltered inlet, even where the general slope of the ground is fairly regular, the wind often changes greatly in speed and direction from minute to minute; such changes are generally due to circular eddies of distant origin.

The strong high level winds may disappear for a few days when an anticyclone forms, and there is little respite from the violent squalls, but near the W entrance the return to normal weather may be quite sudden.

During the strongest squalls, which occur most often W of Cabo Froward and near the main coastline adjoining the stormiest region at sea, the wind almost certainly exceeds 100 knots. The squalls may not last more than a few minutes, but for a time visibility may become very poor in rain, sleet, or snow, and it may suddenly become dark, even though the sun has been shining brightly.

In the E part of the region the WSW or SW winds blow with great force and commonly exceed 50 knots. These winds blow from mid-September to the end of March, reaching their greatest force in October and November.

They commence in the early hours of the morning and reach their maximum strength between 1400 and 1600 hours, then decreasing gradually as the sun goes down.

Working cargo with ships at anchor in Rada de Punta Arenas often has to be suspended during daylight hours and carried out during the night.

Sea fog is not frequent in this area, but the lowest clouds often lie about 91m above sea level and sometimes have their bases on the sea surface; the identification even of nearby landmarks may become difficult. Even when the cloud base is over about 152m, there may be rain squalls, drizzle, and at times thick snow, often associated with masses of cloud so dense as to cause semi-darkness in the middle of the day, with visibility practically nil.

It is a noticeable feature of this area that the worst conditions may be replaced in the course of a few minutes by a cloudless sky and exceptionally good visibility at all levels, mountain peaks becoming clearly visible at a distance of 100 miles or more.

Such a change is nearly always coincident with the arrival of drier and cooler air from higher latitudes.

Tides—Currents.—The character of the tides in the Atlantic and Pacific Oceans differ considerably.

As Estrecho De Magallanes forms a narrow channel linking the two oceans, strong tidal currents run through the strait reaching a rate of 8 knots in the narrows at springs. Inland, the tidal currents vary in strength; details will be found in the appropriate parts of the sector.

The directions in which the tidal current is running is important, especially when navigating the E part of Estrecho de Magallanes. The charts show the rate of the current at ordinary springs and its direction at different anchorages.

The tides are fairly regular, two in 24 hours, except in certain bays, where slight variations may be met due to local factors. Between Punta Dungeness and Primera Angostura the range of the tide is great, being as much as 12m at springs.

The range quickly is reported to decrease towards the direction of SW. In Segunda Angostura it is 6m and at Rada de Punta Arenas only 2m.

It should be noted that the W and E currents continue to run in the channel for three hours after HW and LW, respectively, there are however, some exceptions to this rule.

The wind in the wide parts of the strait and between the narrows seems to have some effect on these times, especially at neaps; but for practical purposes three hours may be taken.

The great range of the tide means that a large volume of water is periodically transferred from the ocean to the strait and vice-versa. This movement causes the strong current in this area, and the narrower the channel the stronger the current. Thus, at the entrance to the strait, the strength of the tidal current is from 2 to 4 knots, and in Primera Angostura it reaches 6 to 8 knots, decreasing as the narrows trend SW.

It should be the aim of vessels proceeding W through the strait to arrive off the approach to Primera Angostura on the last of the E current, so as to gain the full force of the W current through the narrows as soon as it begins.

Conversely, vessels proceeding E should approach the W entrance to Segunda Angostura as the E current is starting.

Through both Primera Angostura and Segunda Angostura, the current runs straight, but at each entrance, the pent-up water seeks to spread out, and consequently causes a strong set toward the banks on either side after leaving the narrows, with a corresponding in draft at the other end.

Thus, a vessel going with the current should endeavor to stay in the axis or suffer a set toward the N or S shore. Care must be taken when approaching Primera Angostura as the E current sets towards Banco Orange to S of the channel. Very little set will be found from Punta Gracia into Paso Real.

Strong tide rips will be seen in many places where no dangers exist, especially the W end of Primera Angostura, off Cabo San Vicente, in Bahia Lee, between Isla Isabel and Isla Santa Magdalena, and on both sides of Banco Walker.

Pilotage.—Pilotage is obligatory for all vessels using either of the channels or the strait; however, due to the lack of pilots, the obligation for pilotage on an ocean to ocean transit of the strait is often waived and new regulations in this regard were being prepared.

It has been reported that Chilean Pilots are available with 4 days notice for vessels making the E to W passage of Estrecho de Magallanes. However, VLCCs must send ETA 7 days, 72 hours, 24 hours, and 12 hours prior to arrival at the pilot station off Bahia Posesion where they embark. The pilot boat is equipped with VHF channel 16 and 2182 kHz.

Westbound vessels normally embark pilots off Cabo Posesion; by special arrangement and subject to weather conditions, pilots may be embarked off Punta Delgada.

It has been reported that on the W end of the Straits, depending upon the weather, pilots will disembark at Bahia Felix in good weather or Isla Shelter in bad weather.

The pilots are only required to take vessels to Punta Arenas, should pilots be retained on board and are unable to disembark at Laitec, on **Chiloe Island** (43°20'S., 73°35'W.).

Pilots for vessels that are bound E embark about 4 miles S of Laitec.

Navigational advice for the area of Estrecho de Magallanes, between Banco Triton and the E entrance, can be requested from Punta Delgada or Punta Arenas radio stations.

The information is based upon data from Punta Delgada and Punta Dungeness radar stations.

Regulations.—The annual traffic is now about 1,000 ships, composed of all types such as cargo vessels, ore-carriers, large tankers, and LPG carriers.

Vessels having a draft of up to 21.3m are authorized to transit the strait. Vessels over 21.3m must obtain a special clearance from the Chilean Coast Guard and Merchant Marine Bureau. There is no restriction as to size, but the length should not exceed 175m.

The least charted depths, 27m on the main route, lie between the W end of Primera Angostura and Banco Triton.

The channel is 1 mile wide between the 20m depth contours in this area; many adjacent dangers are unmarked.

The Chilean Navy issues the necessary provisions regulating the passage. They stipulate that transit of Primera Angostura be done in daylight, under good visibility, and under the supervision of a pilot. It has been reported that the transit may be done in daylight or darkness under any visibility conditions.

By reason of the growing increase of maritime traffic, the sizes attained by certain ships, especially VLCC., and in order to increase the safety of navigation, especially in confined passages, the Chilean authorities have taken certain measures concerning, at present, the Primera and Segunda Angostura, and the Paso Tortuoso.

Argentine authorities state that all vessels passing through Argentine territorial waters, to enter or leave Estrecho de Magallanes, are required to call "Trinidad" naval radio station, situated at Cabo Virgenes Lighthouse, on VHF channel 16 and 67, giving call sign, nationality, and any other information that may be requested. Weather forecasts are provided on request.

All vessels taking the Primera and Segunda Angostura must inform the maritime authorities at Punta Arenas of their ETA at the entrance to Estrecho de Magallanes 12 hours in advance, giving vessel's name, ETA at the mouth of the strait, length, maximum draft, grt, port of destination, ETA at pilot station or waiting area, and Captain's name.

Vessels must maintain constant watch on VHF channel 16 and 2182 kHz during passage. Vessels must inform the Maritime Authority in Punta Arenas when entering or leaving Estrecho de Magallanes, when passing Punta Dungeness Light, Punta Anxious Light, and Isla Tamaror Cabo Pilar as appropriate.

During passage, vessels must report their position and speed every four hours if not carrying a pilot, or at 0800 and 2000 hours if carrying a pilot.

To enable the Maritime Authority in Punta Arenas to control traffic in Primera and Segunda Angostura and to check the suitability of vessels intending to transit the narrows, Traffic Control Waiting Areas have been established at Cabo Posesion, Bahia Felipe, and Punta Arenas.

Vessels without a pilot must anchor in these areas for the local maritime authority to check vessel's certificate of safety, suitability for navigation, and its equipment.

This check takes place on a vessel's first transit and every 6 months thereafter.

It is recommended to wait for high tide in Bahia de Santiago in order to navigate in the proximity of the Banco Satelite, and of the Banco Triton, it's understood that any vessel (except with special restrictions for VLCC type vessels, hereafter indicated) can navigate in these waters at any moment of the tide, but they must take all possible precautions.

Due to the violent currents which occur in the Primera and Segunda Angostura, the shoals which dot the strait, especially to the SW of Primera Angostura, and the difficulties of maneuvering a VLCC.

The vessels of this type must not enter into the strait having a draft in excess of 21.3m without prior authorization by the Direccion General del Territorio Maritimo y Marina Mercante (General Department of the Maritime Territory and Merchant Marine), which will establish the safety measures to be observed.

They also must pass Primera and Segunda Angostura only during daytime, must not navigate to the approaches of the Banco Satelite and of the Banco Triton unless around the time of high tide at Bahia de Santiago, and must be maneuvered by a captain or by a pilot having much experience.

Great importance is attached to Radio Services, and the following stations provide a constant flow of Weather Forecasts and Regional Notices to Mariners. All transmissions are in Spanish. All times are in UT (GMT).

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| Evangelistas Island | CBF 59 (Forecast for W Section). A 3 on 2738 at 0245, 0845, 1445, and 2040. A3 on 6395 at 0240, 0840, 1440, and 2040 |
| Punta Dungeness | CBF 67 (Forecast for E Section). A 3 on 2738 at 0545, 1145, 1745, and 2345. A 3 on 6395 at 0540, 1400, 1740, and 2340. |
| Magallanes | CCM (Forecast for Area from Isla San Pedro to 0'S) A 1 on 464, 2067.5, 4256, and 8510 at 1400, and 2200. (Synopsis for Isla San Pedro and Diego Ramirez) A 1 on 2067.5, 4256, and 85100 at 0255, 0555, 1155, 1455, 1755, 2055, and 2355. (Reports from meteorological observation stations) A 3 on 4390, and 8773 at 1330, and 2130. (Navigation warnings) A 1 on 464, 2067.5, 4256, and 8510 at 1430, and 2215. |

Broadcasts are given 1 hour earlier during the period of (DST) Daylight Saving Time.

Daylight Saving Time commences on Sunday following the second Saturday of October and ends the second Saturday of March.

Vessels requiring radar assistance while in the area between **Banco Triton** (59°37'S., 69°55'W.) and the E approach to Estrecho de Magallanes should report in as follows:

For vessels that are bound E, report to Magallanes on channel 16, when abeam of Punta Arenas.

When 20 miles from **Punta Baxa** (52°35'S., 69°36'W.), report to Punta Delgada on channel 68, 11, or 13.

For vessels that are bound W, report to Magallanes when 24 hours from arrival at landfall position, 52°35'S, 68°10'W.

When 20 miles from landfall point, report to Punta Dungeness Light Station or Cabo Espiritu Santo Light Station on channel 16.

The stations at Magallanes and Punta Delgada will apply information concerning marine traffic, position of oil platforms, navigational warnings, weather, tides, and the status of the pilot and anchorage waiting areas.

Directions.—Vessels with a draft of more than 13.7m should pass well S of the S end of Banco Sarmiento, at least 20 miles SE of Punta Dungeness, and approach the coast S of Cabo Espiritu Santa on a course of 270°.

When about 11 miles from the coast, alter course to approach a position 4.5 miles S of Punta Dungeness Light.

This track passes 4 miles NE of the 8.5m shoal lying 8.25 miles NNE of Cabo Espiritu Santa.

From a position 4.5 miles S of Punta Dungeness Light, steer 288° to a position 4.1 miles bearing 205° from Cabo Posesion Light. The pilot is embarked in this vicinity. From this position steer 270° with Cerro Direction Light ahead.

When 7 miles E of that light, alter course to 228° and keep in the middle of the channel, passing 1.2 miles off Punta Delgada Light and the same distance off Punta Mendez Light.

When the latter light is abeam, alter course to 212° to pass 1.25 miles off Bajo Satellite Light and then pass through a position bearing 157°, 1.5 miles from that light.

When approaching or leaving the narrows, care must be taken against the strong sets toward the shoals on each side of the channel.

The lighthouses, Punta Barranca Beacon and Cerro Dixon are useful marks.

From a position bearing 157°, 1.5 miles from Bajo Satellite Light, steer 247° to pass through the unmarked channel, about 0.75 mile wide, between the 2m depth contours, giving due regard to tidal currents.

On reaching a position 112.5° about 1.7 miles from Banco Triton Light, alter course towards Segunda Angostura, with Punta Mendez Light astern bearing 060° and Segunda Angostura Light ahead bearing 240°, to a position bearing 104°, 7 miles from Cabo Gregorio.

Vessels of lesser draft should conform to the above directions. Vessels bound to the E follow the reverse track.

When approaching Primera Angostura from the SW, the first land visible S of the narrows will be Cerro Dixon.

Care should be taken when entering Primera Angostura from the SW, as the ebb current sets strongly on to Bajo Satellite.

East Entrance to Primera Angostura

8.2 Cabo Virgenes (Cape Virgins) (52°20'S., 68°21'W.), which is 41m high, is the best land fall for vessels making Estecho de Magallanes (Strait of Magellan) from the N or E, and is usually the first land seen.

In clear weather the cape is visible from a distance of 25 miles. Several houses and a lighthouse stand on the cape.

Vessels approaching from the N may obtain temporary anchorage in a depth of 12.5m with Cabo Virgenes Light bearing 202°, 2 miles distant. It is reported that the cape can be picked up on radar at about 29 miles.

Shoal water, marked with kelp, lies within the 5m curve and extends about 0.9 mile E and 1.25 miles SE of Cabo Virgenes.



Cabo Virgenes Light

Roca Virgen (52°20'S., 68°20'W.), awash, is located on this shoal, about 0.8 mile ESE of Cabo Virgenes.

The E approach to Estrecho de Magallanes should be made with care. The variability of the direction and the velocity of the tidal currents make steering along an intended track uncertain in the approach.

Reports have been made of vessels striking bottom outside the limits of the dangers charted E of Cabo Virgenes, but there is no evidence, as the accidents occurred at night and no bearings could be given.

8.3 Roca Cleopatra (52°16'S., 68°12'W.), with a depth of 3.5m, is charted in a position 7 miles ENE of Cabo Virgenes. Its existence is doubtful.

An area of discolored water was reported to lie about 7 miles E of Cabo Virgenes.

Banco Sarmiento, contained within a 20m curve, extends about 20 miles SE from Cabo Virgenes. Deep-draft vessels should give this bank a wide berth due to the possibility of shoaling.

Roca Nassau (52°22'S., 68°16'W.), a small pinnacle with a depth of 0.9m, lies 3.75 miles ESE of Cabo Virgenes Light, near the N extremity of Banco Sarmiento. Except in gales, the rock does not break until LW.

An isolated 20m patch lies 1.25 miles E of the S extremity of Banco Sarmiento.

8.4 From Cabo Virgenes the coast trends SSW 5 miles to Punta Dungeness, then trends in a general WNW direction about 20 miles to Cabo Posession.

Punta Dungeness (52°24'S., 68°26'W.), the N entrance point of the strait, is the extremity of a low spit of gravel and sand which projects 3.5 miles S from the foot of a low range of hills, between Cabo Virgenes and Monte Dinero. The spit has a shingle beach on each side.

Above the HW mark, it is covered with long coarse grass and a thick undergrowth of scrub, forming a network with the long kelp which is blown up by the heavy gales and dried in the summer sun.

From the quantity of kelp which covers the spit, as well as from the large pieces of wreckage found, sometimes as much as 1 mile from either beach, it seems evident that at times the sea must break over its whole extent.

A light situated on Punta Dungeness is shown from a round metal tower, 25m high. There is a signal station connected by

telephone to Punta Arenas. The light is equipped with a radiobeacon and racon.

Tides—Currents.—The spring range of tide at Punta Dungeness is 9.1m, the mean range is 7.2m.

From Punta Dungeness, the coast trends WNW 5.75 miles to Punta Wreck. Cerro Cliff, 82m high, is located 1.75 miles ENE of Punta Wreck and Monte Dinero, 85m high, rises 1.25 miles NW of the same point. A beacon, marking the border between Argentina and Chile, is located on Monte Dinero.

Punta Daniel lies 8.25 miles WNW of Punta Wreck, then the coast trends 6.75 miles farther WNW to Cabo Posesion.

Cabo Posesion (Cape Possession) is a bold sheer headland, 112m high. The land NE of the cape is so much lower, that from a distance of 15 miles E, the cape appears as an island.

A light is shown from a square masonry tower, 11m high, situated 0.6 mile WNW of the summit of the cape.

Along this sector of the coast the 20m curve lies 183m off Punta Dungeness, 1 mile S of Punta Wreck, 2 miles S of Punta Daniel, and about 0.6 mile S of Cabo Posesion.

There are isolated patches, with depths of less than 20m, charted along this coast. Bajo Wallis (Wallis Shoal), with a least depth of 2m and consisting of sand, lies 2.5 miles offshore about midway between Punta Wreck and Punta Daniel. It is joined to the coast by a ridge, with depths of less than 6m, which vessels should not attempt to cross.

Anchorage.—There is a convenient anchorage on either side of Punta Dungeness; the bottom is stiff mud which, on the E has a thin layer of stones.

The anchorage on the E side of the spit is the better during strong WSW winds; there is no sea here until the wind draws S of SW, though the squalls over the spit are heavy.

The best berth is in a depth of 18m, with Punta Dungeness Light bearing 240° at a distance of 2 miles and with Cabo Virgenes Light bearing 019°. The anchorage extends 1 mile farther E in more shallow water, about 12m.

The anchorage in the bay on the W side of the spit is preferred if there is no strong W wind, as the curve of the bay enables a vessel to anchor well under the N shore, and consequently out of the strength of the tidal currents.

A large vessel should not pass N of a line joining Monte Dinero and Punta Dungeness Light. There is anchorage in 22m, with Punta Dungeness Light bearing 115°, distant 2 miles.

Anchorage may be taken farther N of this position according to draft. Submarine pipelines are laid in these waters and can best be seen on the chart.

Anchorage is prohibited within 1 mile of either side of the gas pipeline which crosses the entrance between Punta Dungeness and Cabo Espiritu Santo. Vessels should also keep clear of the three gas production platforms situated between 2 and 3 miles NW of Punta Dungeness.

8.5 Bahia Posesion (Possession Bay) (52°16'S., 69°11'W.) is entered between Cabo Posesion and an unnamed point 20 miles SW. Cerro Direccion, 67m high, is located 2.25 miles N of the W entrance point of the bay. This hill and another S of it appear as islands when approached from the E.

A light is shown from a metal tower, 17m high, from the summit of Cerro Direccion; a racon is situated at the light. Lighted offshore oil production platforms situated from 4.5

miles WSW to 14 miles SSW of Cabo Posesion and may best be seen on the chart.

Monte Aymond (52°09'S., 69°29'W.), 261m high, rises 12 miles N of Cerro Direccion. There are four sharp, rocky summits 2 miles WNW of it. This hill is an excellent mark when approaching Primera Angostura from the E, and it is also visible for some distance SW.

Vessels anchor in Bahia Posesion in a depth of about 22m, with Cabo Posesion Light bearing 103° and Cerro Direccion Light bearing about 245°.

The pilot transfer area, with a least charted depth of 28m, is located 2.5 miles SW of Cabo Posesion. An area for the transfer of pilots underway is located 3 miles farther SW.

A Traffic Control Waiting Area is established 3 miles SSE of Cabo Posesion. The spring range of tide in this anchorage is 10.2m and the mean range is 8.3m.

Anchoring is prohibited between the meridians 68°43'W and 69°08'W, except in the designated anchorage areas.

Banco Narrow, in the W part of Bahia Posesion, lies 6 to 10 miles ENE of Cerro Direccion. It has a least depth of about 5m. The tidal current runs strongly across this bank.

A light is shown from the W end of the bank, about 7 miles ENE of Cerro Direccion.

Banco Plumper, midway between Banco Narrow and the coast to the W, consists of fine sand and dries. There is a channel 0.5 mile wide, with a least depth of 11m, between the two banks.

8.6 Cabo Espiritu Santo (52°40'S., 68°36'W.), the S entrance point of the E entrance to Estrecho de Magallanes, is a steep white cliff about 58m high. It is the seaward end of a range of hills extending SW across Tierra del Fuego. The cape is not easily distinguished except from the strait.

When seen from seaward, it appears as other cliffs in the vicinity, although it is the highest. The cliffs end 3 miles NW of the cape and the land is much lower.

The spring range of tide at Cabo Espiritu Santo is 11.9m and the mean range is 9.3m.

Two lights are shown at Cabo Espiritu Santo. One is shown from a white round tower at an elevation of 63m, about 1.2 miles SE of the cape.

The other is shown at an elevation of 49m from a yellow metal tower with black bands about 0.5 mile further SE. It was reported that Cabo Espiritu Santo could be picked up on radar at approximately 37 miles.

A coastal bank, which dries, extends 1 mile from the cape, while 2.5 miles further N, it extends 1.5 miles offshore.

A shoal, with a depth of about 8.5m, lies about 8 miles NNE of the cape.

8.7 From Cabo Espiritu Santo the coast trends NNW, 9 miles to Punta Catalina, which is similar in appearance to Punta Dungeness.

Punta Catalina is the extremity of a low spit of sand and gravel that appears low at HW, but with a change of level at LW, the appearance must not be forgotten when taking bearings. A shoal, with a depths of 10.2m, lies 5 miles E of Punta Catalina. The spring rise in tide at Punta Catalina is 9m.

Fondeadero Sutelej affords anchorage for large vessels midway between Cabo Espiritu Santo and Punta Catalina, 3.5 miles offshore, in depths of 20 to 25m.

The best berth is with the cape bearing 178° and the extremity of the point bearing 291°. There are also berths 1.5 miles SE and NW of this position.

It is not advisable to anchor here with Punta Catalina bearing less than 277°, as N of this line the tidal currents attain rates of 3 to 4 knots, causing vessels at anchor to be tide-rodé, even in a gale, and to roll heavily.

Bahia Lomas (Lomas Bay) (52°33'S., 69°00'W.), entered between Punta Catalina and Cabo Orange, 23 miles to the W, is almost entirely filled by drying banks consisting of fine dark sand. Two lighted offshore oil production platforms, standing close together, lie 4.5 miles WNW of Punta Catalina.

Banco Lomas extends 3 miles WNW from Punta Catalina and from 4 to 6 miles off the SE shore of the bay, with depths of less than 5m; it is predominantly filled with a sand bank.

Banco Orange extends up to 11 miles off the SW shore of the bay with depths of less than 5m. The NW edge of the bank extends 9 miles NE from Punta Anegada.

This edge of the bank is steep-to, due to the strength of the tidal current through the narrows.

Cabo Orange (52°28'S., 69°23'W.), 2 miles SE of Punta Anegada, is a sharp-pointed conical hill, 57m high; it is unmistakable. As the cape is approached from the E, a remarkable white patch will be seen on its E side.

A light is shown from a green metal, tripod structure standing on the N edge of Banco Orange, 3.5 miles NNE of Cabo Orange.

Numerous lighted platforms and submarine pipelines are located between Bahia Lomas and Bahia Posesion.

Primera Angostura

8.8 Primera Angostura (First Narrows) (52°30'S., 69°35'W.) is entered between Punta Delgada and Punta Anegada, a low point 4 miles E. It extends 8 miles SW, with a least width of 2 miles, and with depths of 53 to 80m.

The shores are steep and cliffy, but not high. A light is shown close S of Punta Anegada.

Punta Delgada (52°27'S., 69°33'W.), on the NW side of the entrance, may be distinguished by its lighthouse and the settlement in its vicinity.

A light, shown from a round metal tower, 12m high, is situated on the point. There is a prominent flare situated near the light tower. When approaching from the E, the flare obscures the flashes of the light.

Two range beacons in line bearing 288°, are situated 0.4 mile N of Punta Delgada; Punta Malvinas lies close N of the beacons.

Banco Direccion, an extensive sand bank, extends NE from Punta Malvinas along the W side of the approach to Primera Angostura for a distance of about 7 miles. It shoals quickly within the 20m curve.

Anchorage for small vessels may be obtained in depths of 5 to 6m, stiff clay, 0.3 mile offshore between Punta Malvinas and

Punta Delgada. The approach to the anchorage should be made with the range beacons bearing 288°, and anchor when Punta Delgada bears 224°. The depths shoal suddenly from 55 to 5m. There is a 2m patch close N of the range line.

A car ferry run between Punta Delgada and Punta Espora at HW, 4.25 miles SW of Punta Anegada.

There is a pilot station near Punta Delgada Light.

8.9 Morro Nunez (52°29'S., 69°36'W.), on the NW shore, 2.5 miles SW of Punta Delgada, is a prominent triangular cliff, 35m high. Punta Satellite lies 4 miles SW of Morro Nunez.

Punta Barranca, 1.5 miles WSW of Punta Satellite, lies on the N side of the SW entrance to Primera Angostura. It can be identified by its low cliffs, the only ones in the vicinity.

Bajo Satellite (Satellite Patch), marked by a light, contained within the 5m depth contour, extends 3 miles SW from Punta Satellite. A 6.5m shoal lies in the channel, 1.25 miles SSW of Punta Satellite; there are depths of less than 5m between it and the point.

Bajo Satellite is usually marked by kelp, but when the tidal current and wind are strong, the kelp is run under from half-flood to half-ebb.

It is considered unlikely that the 0.5m patch is marked by kelp.

8.10 From Punta Anegada (52°27'S., 69°26'W.), the SE shore of the narrows trend in a SW direction 7 miles to Punta Mendez, 31m high, the most salient point on this coast. Punta Baxa lies on the E side of the SW entrance to Primera Angostura, 3.5 miles SSW of Punta Mendez.

A light is situated on Punta Mendez and a light and racon on Punta Baxa.

Cerro Angulo, 37m high, rises 2 miles SSW of Punta Anegada. It is prominent and has the same conical appearance as Cabo Orange.

Cerro Dixon, 70m high, is located 3.5 miles ESE of Punta Baxa; it is not visible until open S of the point. The hill can be identified from the W by its two rounded hillocks, the S of which is higher, darker, and half the width of the N hillock.

Between Punta Anegada and Punta Espora, 4 miles SW, there is a shallow bay which affords the only anchorage on the SE side of Primera Angostura, where a small vessel can lie out of the main strength of the tidal current.

A 4.7m patch lies 0.75 miles offshore, 1.5 miles WSW of Punta Anegada. A similar patch lies the same distance offshore, 1.5 miles NE of Punta Espora.

A patch of rock, marked by kelp, with a depth of less than 2m, lies in the bay 2.5 miles NE of Punta Espora, about 0.3 mile offshore.

Puerto Progreso (52°29'S., 69°28'W.), a small harbor that can accommodate vessels up to 500 grt under favorable tidal conditions, is located 2 miles SW of Punta Anegada.

Two beacons are situated near the harbor and when in line, bearing 158°, lead to a slipway where there are some oil tanks. A light is shown 1.5 miles NE of Punta Espora.

The settlement stands 0.6 mile E of the harbor near the shore. There is a prominent house 0.75 mile to the S.

Roca San Vicente (52°34'S., 69°38'W.), with a depth less than 2m, lies 1.3 miles NW of Punta Baxa. A shoal, with a depth of 3.2m, lies 1 mile W of Punta Baxa.

Primera Angostura to Segunda Angostura

8.11 From **Punta Barranca** (52°33'S., 69°42'W.) the coast recedes NW about 6 miles and forms Bahia Santiago; then the coast extends about 17 miles SW to Cabo Gregorio, the N entrance point of Segunda Angostura.

Sierra Gregorio trends parallel to and within 5 miles of the shore N of Cabo Gregorio, attaining an elevation of 360m. Hombro de Gregorio, the W shoulder of the range, is located 8 miles NW of Cabo Gregorio. During thick weather, it will appear frequently through the mist.

There is a sand hill about 1 mile N of Cabo Gregorio, 60m high, and Cerro Mogote, 6.25 miles WNW of the cape, attains an elevation of 78m. From a position E of **Banco Triton** (52°37'S., 69°55'W.), these two hills and Cabo Gregorio appear as islands.

Cerro Sutlej (52°23'S., 69°45'W.), 152m high, rises 9 miles WNW of Punta Delgada. It becomes clear of the range at the back, forming a good mark when a vessel is abreast of Banco Triton. In some lights Cerro Util, 12 miles W of Punta Barranca, will be seen as a small double hill close to shore over Punta Valle, the W entrance point of Bahia Santiago.

From Punta Barranca to Cabo Gregorio, the 20m curve is irregularly shaped, but lies as much as 6.25 miles offshore in the vicinity of Banco Triton.

Banco Triton (52°37'S., 69°55'W.), with a least depth of 5.7m and marked by a lighted buoy, lies 9 miles WSW of Punta Barranca. The bank is composed of sand.

Tidal currents run strongly over the bank and usually form ripples near its shallowest part. The bank is reported to be extending S.

8.12 Bahia Santiago (52°32'S., 69°52'W.) is entered between Punta Barranca and Punta Valle, 11.5 miles WSW. Banco Barranca extends from the shore W of Bajo Satellite and occupies the NE part of the bay. The depths over the bank vary from 5 to 9m. A detached 8.5m shoal lies 4 miles E of Punta Valle.

Anchorage in depths of 10 to 20m may be obtained in Bahia Santiago.

During E winds, the best anchorage is off the SW end of Banco Barranca, 4.5 miles E of Punta Valle, where the kelp forms a breakwater leaving calm water on the lee side.

During W winds, the best anchorages are closer to Punta Valle or in Bahia Gregorio, 10 miles SW.

Bahia Gregorio (52°37'S., 70°08'W.) lies between Punta Valle and Cabo Gregorio, 8.75 miles SW. Cabo Gregorio is sandy and end in a small cliff, 4m high.

Although the cape is free of dangers, it should be given a wide berth as the tidal current sweeps round it at rates of 4 to 5 knots towards the shoals to the SW. A radio mast stands 1 mile N of the cape.

Banco Tribuna has a least depth of 6.7m, located 3.5 miles E of Cabo Gregorio. There is a narrow bank, with a least depth of 19.7m, 4 miles ESE of the shallowest part of Banco Tribuna.

8.13 Puerto Sara (52°38'S., 70°12'W.) (World Port Index No. 14090), 1.75 miles NNE of Cabo Gregorio, has an oil terminal from which crude oil is exported.

A pier, about 400m long, extends SE, but was reported in a bad state of repair and berthing alongside its head was impracticable.

Near its root there is a cold storage plant and a group of houses.

A pipeline is laid from the root of the pier in a SE direction to a number of mooring buoys which lie about 0.2 mile SE of the head of the pier, in depths of about 25 to 28m.

Vessels are berthed at the beginning of HW slack in daylight hours only. Tankers up to 75,000 grt and 14.9m draft can be accommodated.

Pilotage is compulsory; the pilots come from Punta Arenas. The boarding place is about 1 mile SE of the oil terminal.

Vessels approaching Puerto Sara from the E should pass S of Banco Tribuna and not steer for Puerto Sara until Hombro de Gregorio bears 298°, or at night, until Puerto Sara pier light bears 309°, to clear the bank.

Approach the oil terminal with the pier head in line with the left edge of the NE oil tank, bearing 331°, or at night with Puerto Sara light on the same bearing.

The port anchor should be let go when from the bow of the vessel the light beacons 0.5 mile N of Cabo Gregorio are in range bearing 225°, veer 220m of chain, then let go the starboard anchor, securing to the berth heading 230°.

Tugs are available to assist in berthing and to run all moorings to the buoys.

It should be noted that the holding ground where the port anchor is let go is good, but the starboard anchor is let go on rock and pebbles. Care must be taken not to drag or foul this anchor.

Anchorage is available off Puerto Sara, in Bahia Gregorio, in a depth of 20m, with the light on the pier bearing 240°, distant 1.5 miles.

The tidal currents in the anchorage area have a rate of 2 to 3 knots and the tidal range is about 5.5m at springs.

8.14 The S shore, between Punta Baxa, the SE entrance to Primera Angostura, and Punta San Isidro, the NE entrance to Segunda Angostura, is low and fringed by a chain of low hills with few landmarks. Cerro Negro rises near the coast 5 miles S of Punta Baxa.

Cerro Doble Pico is located 8.25 miles S of Punta San Isidro, and Pico Gap, 291m high, lies 21 miles SE of the same point.

Bahia Felipe occupies all of this S shore. There are several anchorages in the bay, but they are exposed to the prevailing winds.

An extensive bank of irregular shape, with depths of 8.3 to 19.3m, about 4 miles N to S and a like distance E to W, lies in the SW approach to Primera Angostura, SE of the recommended track. Its center is located about 5 miles SW of **Punta Baxa Light** (52°35'S., 69°37'W.).

The 20m curve lies up to 4.5 miles offshore in Bahia Felipe, but the water N of Punta San Isidro is steep-to, with a depth of 76m charted about 0.3 mile NE of the point.

Arrecife Barnacle (52°45'S., 70°02'W.) has a least depth of 5m which is located 2 to 4 miles E of Punta San Isidro. This is the only rocky ledge between the two narrows.

Anchorage.—In the NE part of Bahia Felipe, anchorage sheltered from SE winds may be obtained in 9.5m, with Punta Baxa light structure bearing 021°, 3.5 miles, or farther S in 12m, with the light bearing 024° and Cerro Negro bearing 090°. When leaving this latter berth for the W with a W current, steer for Hombro de Gregorio until well out in the strait to avoid being set onto the shoal at the head of the bay.

Traffic Control Waiting Area is established in Bahia Felipe, 5 miles ESE of Punta San Isidro.

Good anchorage may also be obtained in the W part of Bahia Felipe, well sheltered from SW winds, midway between Punta San Isidro and Punta Piedra, 11.5 miles ESE.

This anchorage should be approached with Cerro Doble Pico bearing 210°, which leads over the E end of Arrecife Barnacle; the anchor should be let go when **Cerro Cono** (52°40'S., 70°23'W.), on the N shore of Segunda Angostura, bears 290°, in a depth of 25m, sand and shells.

Another good berth, nearer to Punta San Isidro, is in a depth of 20m, with the point bearing 298° at a distance of 1.25 miles.

Care is necessary when using this anchorage, as the shallow coastal bank extending E from the point is steep-to and the W current runs over it strongly.

Segunda Angostura

8.15 Segunda Angostura (Second Narrows) is about 12 miles long, NE to SW, and 4 to 6 miles wide. The narrows are entered from the E between **Cabo Gregorio** (52°39'S., 70°13'W.) and Punta San Isidro, 5.75 miles SSE.

Cerro Cono, 6.5 miles W of Cabo Gregorio, is a distinctive hill, 41m high. A light on its summit is shown from a round tower, 10m high.

Punta Gracia (52°44'S., 70°32'W.), 6.25 miles WSW of Cerro Cono, is the N entrance point of the W end of Segunda Angostura. It is a cliffy point, 53m high.

The N shore recedes between Cabo Gregorio and Punta Gracia and is bordered by a bank with shoal water extending out about 0.5 mile from a line joining the cape and the point.

These shoals consist of a drying sandbank, 1.3 miles long, with its E end 1.5 miles WSW of the cape, while 6 miles WSW of the cape is Banco Halfway, 1.25 miles long, with a least depth of 5.5m on it. East of Punta Gracia, the bank extends about 1 mile off the shore and is steep-to.

8.16 The S shore of Segunda Angostura is higher than the N shore; it is cliffy and steep-to.

From **Punta San Isidro** (52°44'S., 70°08'W.), the shore trends WSW 7.5 miles to Cabo San Simon which is 68m high, then curves gradually WSW 4.5 miles to Cabo San Vicente, 56m high, the S entrance point of the W end of Segunda Angostura.

Cerro Agudo, 6 miles WSW of Punta San Isidro, appears as a remarkable conical peak which makes a good mark until Cabo San Simon is raised. Promontorio Sweepstakes, on the coast 4.25 miles W of Cerro Agudo, 50m high, is a good landmark for anchoring in Bahia Gregorio.

Segunda Angostura Light (52°44'S., 70°11'W.), 2 miles W of Punta San Isidro, is shown from an octagonal concrete tower, 6m high. The lighthouse is equipped with a racon.

Directions.—From a position 7.5 miles ESE of Cabo Gregorio, steer 257° to pass 2 miles N of Segunda Angostura Light. When Cabo San Vicente Light bears 180°, steer 215° to a position 1.75 miles W of Cabo San Vicente Light, then steer 182° to enter Paso Nuevo. Vessels bound E steer reciprocal courses.

Segunda Angostura to Paso Ancho

8.17 From **Punta Gracia** (52°44'S., 70°32'W.) to Punta Gente, about 18 miles SSE on the E shore, both the E and W sides of the strait are indented with bays.

From Segunda Angostura, there are three routes leading S to Paso Ancho. Paso Nuevo, E of Isla Marta and Isla Magdalena, is the recommended and most generally used route.

The others are Paso Reina, the middle route; and the channel through Paso Real and Paso Pelicano, between Isla Isabel and the W shore. The last mentioned channel is available to vessels with a draft up to 5.5m.

Bahia Whitsand (52°43'S., 70°36'W.) is entered between Punta Gracia and Punta Low, 6 miles WSW. It is sheltered from all winds N of SW and is free from the influence of the tidal currents.

Good anchorage may be obtained in a depth of 10.7m, mud, with Punta Gracia bearing 082° and Punta Silvestre, the NE extremity of Isla Isabel, bearing 171°.

Ensenada Oazy is entered from the NE corner of Bahia Whitsand, between Punta Shepherd on the E and Punta John, 1 mile W.

The entrance is about 1 mile wide, but it narrows quickly and is unsuitable for an anchorage.

Kelp extends 0.3 mile offshore between Punta Gracia and Ensenada Oazy.

8.18 Puerto Zenteno is entered between Punta Perno and Punta Puno, 1.25 miles SSW and 2.75 miles SSW, respectively, of Punta Low. It widens within the entrance, and is completely sheltered, but during W winds a sea rises quickly and is dangerous for boats. No vessel without local knowledge should enter this bay.

A detached shoal, depth of 7.7m, surrounded by kelp, lies in the approach to Puerto Zenteno, 1.5 miles SE of Punta Perno.

An isolated 6.2m shoal, also surrounded by kelp, lies 1.5 miles ESE of Punta Zenteno, a point 0.6 mile SE of Punta Puno.

Puerto Zenteno is almost entirely filled with a shallow bank. The entrance lies between Punta Puno and Isla Plaid, 25 mile to the N. The navigable channel lies between a rock, awash, 183m SSW of Isla Plaid, and Punta Puno which is a steep-to sand spit. The channel is 183m wide with depths of 10m.

Islote Pitcher lies on the N side of the channel, about 0.5 mile W of Punta Puno.

Laguna Cabeza del Mar, a large shallow lake 7 miles W of Punta Zenteno, may be reached by passing through Puerto Zenteno, Canal Tortuoso, and Laguna Baja.

Anchorage may be obtained outside the entrance to Puerto Zenteno in a depth of 11 to 13m, about 1 mile SE of Punta Zenteno.

Isla Isabel (52°52'S., 70°42'W.) lies 5 miles SE of Puerto Zenteno; it extends 7.5 miles in a NE to SW direction and is 2 miles wide. Ranges of hills extend in ridges along its length.

The greatest elevation, 54m, is near the SW end. Punta Silvestre, the NE extremity of the island, is very low and steep-to. It is composed of sand, shells, and shingle.

A bank, with a least depth of 3.7m, extends 1 mile WSW from a position 1 mile S of Punta Tern, the SE extremity.

8.19 Paso Real lies between Isla Isabel and the mainland to the W. Paso Pelicano is the S portion of Paso Real between Cabo Thorax and the mainland to the SW.

Bajo del Medio (52°48'S., 70°40'W.), with a least depth of 4.5m, lies in the N entrance to Paso Real, 2.75 miles ESE of Punta Zenteno; it is joined to the NW extremity of Isla Isabel by a bank with a least depth of 4.5m. A shoal, with a depth of 2.7m, lies 1.75 miles WNW of Punta Silvestre.

Punta Ana, a low sandy point, is located 2 miles SW of Punta Zenteno. Dangers covered by kelp, which is usually visible, lie up to 2 miles E and 1.5 miles SE of the point.

Punta Rosa (52°51'S., 70°48'W.) is located 2.75 miles SSW of Punta Ana. The 5m curve lies 0.25 mile E of Punta Rosa and the 10m curve lies about 1 mile E of the same point.

Paso Pelicano is entered from the N between Punta Rosa and Punta Hook, 2.5 miles SE on Isla Isabel. Its S entrance is between Cabo Thorax, on Isla Isabel, and Cabo Porpesse, 1.5 miles S. A light is shown from Cabo Thorax.

Tidal currents in Paso Real run at a rate of 1 knot. In Paso Pelicano their rates are from 1.5 to 2 knots.

Anchorage for a vessel of moderate draft may be obtained in a depth of 13m on the E side of Paso Real, with the N extremity of Isla Isabel bearing 123° and Punta Gracia bearing 035°. Attention should be given to the shoal water about 0.5 miles NE and 0.5 mile W of the anchorage.

Vessels may also anchor N of Isla Isabel, with Punta Silvestre bearing 154° and Punta Gracia bearing 029°, in a depth of 18m.

8.20 Cabo Negro Gas Terminal (52°56'S., 70°48'W.), consisting of a 36m long T-shaped concrete jetty, with an alongside depth of 14m, and accommodating vessels up to 60,000 dwt, with a maximum length of 230m and a maximum draft of 12.8m, alongside its head, has been built 0.4 mile WNW of Cabo Porpesse. A mooring buoy, dolphins, and mooring posts lie off the head of the jetty.

Port limits of the terminal are the parallel of Cabo Thorax and the meridian joining Cabo Thorax and Cabo Porpesse.

Pilots will berth and unberth vessels at slack water. Berthing is only carried out in daylight, during slack water. Lights in range, bearing 270°, lead to the pier head.

Anchoring within about 0.1 mile of the head of the jetty or range line is prohibited. The terminal should only be approached from the S through Paso Pelicano.

There is anchorage NW of the jetty, 0.25 mile offshore, in depths of 10m, sand, but during prevailing winds from the W to N, Bahia Laredo is preferable.

Directions.—A vessel of moderate size, proceeding through Paso Real and Paso Pelicano, can pass S of Bajo del Medio, keeping at a distance of not less than 0.5 mile off the NW side

of Isla Isabel, until the point 1.25 miles N of Cabo Thorax is abeam, then steer course 190° until the light on Cabo Thorax bears 060°. The S entrance to Paso Pelicano will now be open and a course of 122° should be made good to clear the shoal water SSE of Isla Isabel and the bank, with depths of less than 9m, that extends 1 mile E from Cabo Porpesse.

Care should be exercised to pass E of the shoal patches off the NW extremity of Isla Isabel.

When the wind and current are opposed to each other a race ensues, which is dangerous for boats, in Paso Pelicano S of Cabo Thorax.

8.21 Banco Marta (52°49'S., 70°33'W.), steep-to and marked by kelp, and with a least depth of 3m, lies with its N end 3.5 miles S of Segunda Angostura and 3 miles ENE of Punta Silvestre. The bank extends about 5.2 miles SSW from this position and has an average width of about 0.7 mile.

Isla Marta, lying near the middle of Banco Marta, rises in sheer cliffs to an elevation of 19m. It has a flat summit, and slopes slightly to the E. A reef, which dries, extends 0.25 mile NE from the island.

Isla Magdalena (52°55'S., 70°35'W.), 1 mile long NE to SW, lies 4 miles S of Isla Marta. It is 41m high at its W end, where it rises vertically from the sea.

Shoal water extends about 1 mile NE from the NE extremity of the island. The edge of this shoal is usually well-marked by kelp and tide rips.

A below-water rock, whose position is doubtful, is reported to lie 1 mile N of the light tower that is situated near the center of the island.

A 6.5m shoal lies 1.75 miles ESE of the light tower. Other dangers, best seen on the chart, lie up to 2.8 miles ENE of the light tower.

8.22 Paso Reina (52°53'S., 70°40'W.) lies between the islands and bank described above and the SE coast of Isla Isabel.

There is a navigable width of about 0.7 mile between the shoals to the SE and the coastal bank extending off the SE coast of Isla Isabel.

Banco Walker, with depths of less than 20m, extends for 5 miles in a NE to SW direction in the approach to Paso Pelicano from E. The shallowest part of the bank, with a charted depth of 6.3m, lies 5 miles ENE of Cabo Porpesse.

In Paso Reina, the tidal rates are between 2 and 3 knots; between Isla Magdalena and Banco Walker, they run at rates of 3 to 5 knots.

Anchorage.—Anchorage in Paso Reina may be obtained out of the strength of the tidal current, with Punta Silvestre bearing 023°, distant 1.25 miles, in a depth of 14m, coarse sand and shell.

Directions.—Follow the suggested course for Segunda Angostura and when the light on Cabo San Vicente bears 130°, steer for the N extremity of Isla Isabel which shows as a bluff, bearing 236°. When Punta Silvestre is in line with Punta Alfredo, 2.25 miles SSW, bearing 218°, steer to keep in the middle of the channel between the banks which extend off Isla Isabel and the shoals off Banco Marta and Banco Walker.

Caution.—It is possible that rocks exist between Isla Marta and Isla Magdalena, and between Isla Magdalena and Banco

Walker therefore, the passage between the islands, and between Isla Magdalena and the bank should not be used.

Paso Nuevo is the best and most frequently used of the three routes from Segunda Angostura to Paso Ancho. It lies E of Isla Marta and Isla Magdalena, and its E shore extends from Cabo San Vicente to Punta Gente, 14 miles S.

8.23 Bahia Lee (52°50'S., 70°20'W.) is formed between Cabo San Vicente and Punta Zegers.

Cerro Spiteful is located close to the NE shore of the bay, 4.25 miles E of cape.

Banco Nuevo, with depths of 0 to 10m, extends about 5 miles S from a position 1.5 miles SSE of the light on Cabo San Vicente. The bank lies close E of the 20m curve and is reported to be extending to the NE.

Tidal currents, with rates up to 6 knots, have been experienced in the N end of Paso Nuevo at the time of HW.

The flood current sets E onto Banco Nuevo and the ebb sets W out of Bahia Lee. Heavy overfalls occur S of Cabo San Vicente when strong W and NW winds meet the ebb current.

Anchorage, which should only be used in an emergency and never at night, may be obtained in a depth of 15 to 20m, 1.5 miles ESE of Cabo San Vicente.

Although the anchorage is fairly sheltered from N and NW winds, these winds may suddenly shift to SW, or SW gales may spring up from calms without warning.

Anchoring is prohibited in a 1 mile wide band stretching between Punta Zegers W to Cabo Porpesse, and passing S of Isla Magdalena, due to the presence of a submerged gas pipeline.

Bahia Gente Grande (52°59'S., 70°13'W.) is entered between Punta Zegers and Punta Paulo, 3.5 miles S. Its shores are low and bordered by shallow banks.

Cerro Doble Pico, previously described, lying 0.75 miles ENE of Punta Zegers, is a good mark.

Banco Middleton, with depths of 2 to 4m, extends about 0.8 mile SSE of Punta Zegers. The 5m curve lies up to 0.75 mile off the shore along the N side of the bay and in places about the same distance off the SE and SW shores of the bay.

Isla Contramaestre (52°57'S., 70°21'W.), in the entrance to Bahia Gente Grande, lies 2 to 3.5 miles SW of Punta Zegers. Banco Almeida, with a depth of 5m, lies near the middle of the N entrance to the bay, 0.9 mile N of the N extremity of Isla Contramaestre.

Banco Serpiente, which partially dries on its W end and has a least depth of 3m on its E end, extends 1.25 miles E of the same point. The bank was reported extending E and SE.

Banco Middleton, with depths from 2 to 5m, extends SE from Punta Zegers for 1 mile SE.

Banco Perez, with a minimum depth of 4.4m on its N edge, lies on the SE side of the S entrance channel, 1 mile NNE of Punta Paulo. The bank is marked by kelp.

Directions.—There are two entrances to Bahia Gente Grande. The passage N of Isla Contramaestre is wider, but is not recommended except for small vessels with shallow draft.

The passage is shallow, the rate and direction of the tidal current is irregular, but usually sets across the channel, and Banco Almeida lies in the middle.

The channel S of the island has a least depth of 10m and a least navigable width of 0.4 mile. To enter Bahia Gente Grande

by the S channel, make good a course of 055° to pass midway between the two lighted buoys situated about 1 mile and 1.25 miles, respectively, NNW of Punta Paulo.

As soon as the light on Isla Contramaestre bears 267°, alter course to 087° keeping that light astern, passing N of Banco Perez lighted buoy until Punta Zegers is in range with Cabo San Vicente bearing 328°. Then steer as desired for selected berth.

8.24 Caleta Percy (52°53'S., 70°14'W.) is a small cove N of Punta Vergara, about 2 miles within the N entrance point of Bahia Gente Grande.

On the S side of the cove there is a pier 160m in length with a depth of 2.7m at its outer end. About 0.2 mile N, there is another pier of the same length. A light is occasionally shown from the head of each pier.

Submarine pipelines extend about 1 mile SE from a position on shore 0.25 mile NNE of the S pier head. A berth for tankers up to 10,000 grt, in a depth of 11m, is situated at the seaward end of the pipelines where there are 4 mooring buoys.

The maximum draft that can be accommodated here is about 9.1m. The maximum length is 122m. Except for vessels using the berth, anchoring is prohibited within 0.6 mile and on the range line in the approach to it.

Pilots and Customs Officers are available, but a reliable advance notice of ETA must be sent from the vessel.

Berthing at the tanker berth or piers should be done, if possible, at early dawn when the winds are moderate; this is considered practical in winds up to force 6 or 7.

With SW winds, the sea runs into the cove making the S pier unuseable.

This port is normally used for local shipments only. Berthing is done during daylight hours only.

The port limits of the terminal are the parallel of 52°55.7'S and the meridians of 70°14'W and 70°18'W.

Caleta Clarencia (52°54'S., 70°08'W.), which forms the NE extremity of Bahia Gente Grande, lies 6 miles ENE of Punta Zegers. It is exposed to the prevailing SW wind.

A submarine pipeline extends about 0.7 mile SSE from a position on shore near the oil tanks. There are mooring buoys at the seaward end of the pipeline that will accommodate a tanker up to 28,000 grt, with a draft of 11m.

However, the entrance to Bahia Gente Grande has a limiting draft of 10m and vessels may be required to complete loading at Puerto Sara. The maximum length that can be accommodated is 200m.

A berthing pilot must be used by vessels that are using this berth. Vessels lie on a 255° heading with both anchors out and with mooring lines to the buoys, about 120m in length.

Anchorage.—There is anchorage about 0.7 mile W of the mouth of the Rio Caracol, 5 miles S of Caleta Clarencia, in a depth of 10m. Small vessels can anchor about 0.3 mile offshore in a depth of 5m. Both berths are exposed to W winds. There are several red houses situated on the S bank of the Rio Caracol, near its mouth.

Anchorage may be taken in a depth of 9 to 12m, 1.75 miles NE of Punta Searle, which is located 4 miles S of Punta Paulo in the SW part of the bay.

Smaller vessels may anchor in a depth of 5 to 7m, mud, in a position 1.25 miles SE of Punta Searle.

There is also an anchorage for small vessels 0.75 mile SE of Punta Paulo in a depth of 9m, sheltered from W winds. There is a shoal spot, with a depth of 4.5m, close NE.

8.25 Caleta Hobbs (53°03'S., 70°20'W.), formed between Punta Searle and Punta Hobbs, 2 miles SE, lies in the extreme SW corner of Bahia Gente Grande. The general depths within Caleta Hobbs are 1 to 4.5m. There are some buildings situated on the shore of a small bight close W of Caleta Hobbs.

From Punta Paulo, the shore of the S approach to Bahia Gente Grande trends 4.5 miles SSW to **Punta Gente** (53°00'S., 70°25'W.), a point 22m high. Cerro Huemul rises to 28m, 1.75 miles NE of Punta Gente.

Tidal currents along this shore are strong and the vicinity of Punta Gente should be avoided.

Paso Ancho

8.26 Paso Ancho is that part of Estrecho de Magallanes that lies between Punta Gente and Bahia Laredo on the N, and the entrance to Paso del Hambre about 40 miles S.

Cabo Negro (52°57'S., 70°48'W.), a dark cliff 40m high, is located about 0.9 mile SSW of Cabo Porpesse.

Bahia Laredo is entered between Cabo Negro and a point 2.5 miles SSW. Foul ground lies off the S entrance point of the bay, and the 5m curve lies about 1 miles NNW of the same point. A 4.2m patch lies about 1 mile S of Cabo Negro.

A jetty extends 120m SE from the coast, about 1.2 miles SW of Cabo Negro. There is a depth of 4.5m alongside the jetty head.

There is good anchorage in Bahia Laredo in depths of 10 to 12m, sand and mud, SW of Cabo Negro.

Tidal currents in the bay are of no consequence inside Bahia Laredo. South of the bay they are hardly felt, but N they are strong. Between Cabo Negro and Isla Contra maestre on the E shore, is the W limit of strong tidal currents in the strait.

Small vessels can obtain anchorage in Caleta Chabunco, off the mouth of Estero Chabunco, about 4.2 miles S of Cabo Negro.

A beacon, 16m high, is situated on a hill about 2 miles SSW of the mouth of Estero Chabunco.

8.27 The mouth of the Estero Rio Seco, about 3 miles S of Estero Chabunco, can be identified by buildings which can be seen at a considerable distance.

There is a cold storage plant, with two chimneys in line bearing 285°, and a pier, 100m long with a depth of 3m at its head, situated close NE of the E chimney; it is used by local craft for loading chilled meat.

There is anchorage here in a depth of 22m, with the two chimneys in line and the beacon bearing 355°. This berth is convenient for vessels working cargo and is free of kelp.

Bahia Catalina lies between the mouth of Estero Rio Seco and **Punta Arenas** (Punta Arenosa) (53°08'S., 70°51'W.), 4 miles S. There is a prominent white patch on the cliffs, 2.5 miles NNE of Punta Arenas. When seen from the N, in some light conditions, it resembles a ship under sail.

Tres Puentes, a large refrigeration plant, is situated about 0.7 NNW of Punta Arenas. There are two small piers situated here. The obstruction lights of the 4 radio towers are more noticeable than the lights of the town.

There are two conspicuous aircraft hangars situated 0.3 mile NW of Punta Arenas, and a similar hangar situated 0.3 mile WNW of the same point.

Anchorage may be obtained in the S part of Bahia Catalina in a depth of 27m, with the S most pier bearing 255° about 0.3 mile distant and Punta Arenas bearing 166°, but the holding ground is poor. The bay is very open and offers shelter only from W winds.

Punta Arenas is a projection of low land, consisting of sand and gravel covered with grass and bushes. The point sticks out about 1 mile from the general run of the coast.

The point is steep-to on its NE side, but on the SSE side a sandbank, with depths less than 5.5m, extends 1 mile offshore. This sandbank is said to be extending seaward.

Punta del Rio, the N entrance to Rada de Puntas Arenas, is located about 2 miles SSW of Punta Arenas, close N of the mouth of Rio Las Minas.

Rada de Punta Arenas (53°10'S., 70°54'W.)

World Port Index No. 14100

8.28 Rada de Puntas Arenas is an open roadstead situated about 1 mile SW of Punta del Rio.

It is the first port of entry for Estrecho de Magallanes, and consists of the city, berthing, and anchoring facilities and two tanker berths.

The city of Punta Arenas, which backs the roadstead, is a modern city with all amenities. It is the capital of the province of Magallanes.

A traffic separation scheme is established in the SE approach to Punta Arenas.

Winds—Weather.—The predominant winds are from the NW and although it blows on occasion with great violence, it does not lift the sea. They are dangerous only to small vessels.

The "Panteonero," a local wind which comes up in the spring or summer, is a WNW wind reaching a force of 12 on the Beaufort Scale.

On occasions winds blow from the SW, but without much intensity. However, they cause the tides to rise and occur as tempest in Punta Arenas.

There are sporadic E winds that are dangerous as the bay is open in this direction. These winds have damaged smaller ships and cause larger vessels to drag anchor.

When winds occur from the E or SW, ships moored at the pier should leave and anchor in the bay in case the tide should rise.

The most favorable months are those of winter, when the winds diminish in intensity and there are frequent calm days.

On the contrary, spring and summer present strong winds from the W, blowing for long periods of time; calm days are scarce.

Tides—Currents.—The spring range is 1.4m, while the neap range is 0.6m.

The current of the flood tide flows from the NE to SW, contrary to the ebb current. Without other factors, the change

in direction of the current is produced by the tides. Currents have a maximum speed of 1 knot.

With strong W winds, the current constantly flows toward the E without any effect from the tidal currents.

Depths—Limitations.—Muelle Prat is the only pier in use in the port; it is 380m long. The limiting drafts at the berths are given below.

Berth 1N can accommodate a vessel with a maximum length of 160m and a maximum draft of 7.9 to 8.2m. Berth 1S can accommodate a vessel with a maximum length of 170m and a maximum draft of 6.7 to 8.2m.

Berth 2N can accommodate a vessel with a maximum length of 112m and a maximum draft of 4.9 to 7m. Berth 2S can accommodate a vessel with a maximum length of 110m and a maximum draft of 4.3 to 6.4m.

Berth 3N and 3S are both reported to accommodate a maximum draft of 2m. The Inshore Berth is for small craft only.

Shoaling in the vicinity is continuous and dredging in the berths alongside is in progress.

In calm weather, vessels up to 165m in length can moor stern-to the head of Muelle Prat, riding to the starboard anchor on seven shackles of cable.

Vessels berth with bows to shore due to shoal patches about 40m off each side of the pier.

Mooring at the pier is somewhat dangerous due to the influence of the wind, the currents, and the state of the tide.

Prior knowledge of these factors is required in order to consider their effect.

It is not recommended that vessels over 1,000 grt moor at the pier in winds above force 4.

Catalina Bay Dock lies 0.3 mile NW of Punta Arenosa. The pier is L-shaped, and has a berthing face 150m long. Vessels up to 50,000 gross tons, with a maximum length of 220m and a maximum draft of 11.5m, can be accommodated.

Aspect.—In order to facilitate mooring at night, there are two pairs of leading beacons on each side of the pier; the beacons are 50m apart, enabling vessels to make a safe approach. Both pairs of beacons are aligned bearing 334°, the ones on the N side of the pier have green lights and the ones on the S side red lights. Request for lighting these beacons should be coordinated via VHF with "EMPORCHI."

A yellow square building, and a square white building with a flat roof are situated 0.49 mile and 0.45 mile N and NNW, respectively, from the head of Muelle Prat.

Don Bosco Church, about 0.9 mile NNE of the pier head is conspicuous. There are two radio masts, marked by obstruction lights, situated 0.3 mile NNE of the pier whose lights are seen from seaward above all the lights of the city.

A television mast, showing an obstruction light, situated on Monte Fenton, 4.75 miles WNW of the head of Muelle Prat, is prominent and may be seen at night at 30 miles.

A brown oil tank is situated on shore at the head of the pipeline and two radio towers are situated about 0.2 mile NW of the oil tank.

Pilotage.—Pilotage is compulsory for anchoring in the bay and for mooring to the pier or mooring buoys. The request for a pilot and the vessels ETA should be sent by radio 24 hours in advance. Port pilots embark about 1 mile off the end of Muelle Prat. If there are strong winds or heavy seas, vessels are

advised to have a gangway lowered half-way, with a jumping ladder on the end.

A Traffic Control Waiting Area has been established 1.25 miles S of Punta Arenas.

Signals.—Weather signals are shown between the two radio masts N of the pier, and are also shown on the Maritime Governor's offices at the root of the pier. Signals by day and night are, as follows:

1. Variable weather—Black ball or one green light.
2. Bad weather—Flag "M" or one red light.
3. Storm—Flag "R" or two red lights.

When the variable signal is hoisted, moorings must be checked and reinforced. With bad weather they are again checked and all small boat movement ceases. With storm signals, the port is closed to all movement and work.

Anchorage.—Rada de Punta Arenas affords anchorage protected from prevailing W winds, but is exposed to the E. Pilots take vessels to one of the several designated anchorage berths off Muelle Prat. Vessels should be ready to quit the anchorage in the event of bad weather from the E, or on orders from the Captain of the Port.

Anchorage is prohibited within an area extending about 0.2 mile E and W of the pier and about 0.3 mile S of the pier head, best seen on the area chart.

Vessels must inform authorities of Punta Arenas of their arrival 24 hours in advance and request anchorage at the berth.

The berths are the following, with bearing and distances given from the head of Muelle Prat:

| | |
|---------|---------------------|
| Berth A | 175° and 0.55 mile. |
| Berth B | 132° and 0.55 mile. |
| Berth C | 099° and 0.7 mile. |
| Berth E | 131° and 1 mile. |
| Berth F | 110° and 1.1 miles. |
| Berth G | 093° and 1.2 miles. |

Directions.—When approaching from the N, keep well E of Punta Arenas (Arenosa).

Observe the Traffic Separation Scheme in the approaches to the port, best seen on the chart.

Rio los Ciervos Oil Terminal is situated 1.75 miles SW of Muelle Prat. A submerged pipeline extends 0.3 mile SE from shore and several mooring buoys situated at the seaward end of the pipeline form an oil berth. There are charted depths of 12.8 to 14.6m in the area of the buoys.

It is recommended that vessels should moor at slack water in winds less than 10 knots.

In winds from the N or NE, force 3 or more, and flood current (flowing S), mooring should not be attempted. On land there is a leading line that indicates the direction of the pipeline; it should be used to avoid dropping the anchor on it or anchoring the vessel above it.

Also, there are 2 fixed leading lights, the lighting of which should be requested when mooring to the buoys at night. A pilot from Punta Arenas must be aboard for berthing.

8.29 From Rada de Punta Arenas, the W shore of Paso Ancho extends 12 miles S to **Punta Santa Maria** (53°21'S., 70°57'W.), a point easily recognized by a high cliff with two patches bare of trees.

Caleta Agua Fresca, an open bay, is entered S of Punta Santa Maria. Between Caleta Agua Fresca and Punta Carreras, about 11 miles S, the shore is bold; Punta Carreras is a low point. The N side of the bay is quite foul and should not be penetrated in that direction beyond the point where soundings indicate depths of 11 to 14m.

On the S side the depths decrease gradually toward the back of the bay; there is a small valley through which runs a stream with good fresh water.

Anchorage may be taken anywhere between Rada de Punta Arenas and Punta Santa Maria, in depths of 18 to 22m, sand and shell over clay, 0.75 mile offshore.

Paso Ancho

8.30 The E shore extends from **Punta Gente** (53°00'S., 70°25'W.) to Cabo Monmouth, 22 miles S. It is free of all dangers outside the 20m curve, which lies about 1 mile off this coast. The only break is at Bahia Porvenir, about 19 miles S of Punta Gente.

Bahia Porvenir (53°19'S., 70°25'W.) is entered between Punta Palo and a point about 0.5 mile SSE. It is suitable for small vessels with local knowledge up to 40m in length, and with a draft of 3m, however, vessels with a draft of 1.7m. The pier lies at the head of the bay. Since the improvement of the roads, the importance of the port is declining.

Pilotage for vessels entering Bahia Porvenir is reported to be compulsory.

A wreck, with a depth of 1.3m, lies 0.2 mile SW of Punta Palo. Less water than charted has been reported in the bay.

Cabo Monmouth (53°22'S., 70°26'W.), 3 miles S of Bahia Porvenir, is low and the land rises gradually from it. The cape is prominent only from the N, when it shows up as the end of the land.

Cabo Boqueron (53°29'S., 70°12'W.) is a precipitous headland formed by the abrupt termination of high land extending ENE. Cabo Boqueron is located 10 miles SE of Cabo Monmouth.

Inlets and Passages Southeast of Paso Ancho

8.31 The inlets and channels SE and S of Paso Ancho are entered through Paso Boqueron, which lies between Cabo Boqueron and Punta Arska, the N extremity of Isla Dawson, which lies 0.5 mile SW of Cabo Boqueron.

Bahia Inutil (Bahia Useless) (53°30'S., 69°45'W.) is entered between Cabo Boqueron and Cabo Nose, 16 miles S. The bay recedes about 32 miles to the E. It has no sheltered anchorage and is exposed to W and SW winds which raise a heavy sea.

The N shore is high and cliffy, but declines as the head of the bay is approached. The S shore is also high, but is lower than the N shore. The head of the bay is low with lagoons.

Caleta Esperanza, Caleta Discordia, and Caleta Josefina lie on the N shore of the bay 8.5, 14, and 21 miles, respectively, ENE of Cabo Boqueron and a landing can be effected at each.

In fine weather, small vessels can anchor at **Caleta Discordia** (53°23'S., 69°50'W.), 0.15 mile offshore in a depth of 8m, sand. A shoal bank extends 1 mile S from shore at

Caleta Esperanza and was reported to be extending farther S. Between Caleta Josefina and Puerto Nuevo a shoal bank extends 2.3 miles S.

A vessel should not approach the shores of the bay within a distance of 4 miles, unless bound for one of the coves.

Puerto Nuevo, in the NE end of the bay, 14 miles E of Caleta Discordia, has a jetty 200m long with a depth of 3m at its head. Anchorage may be taken 1.5 miles offshore, in a depth of 10m, sand and stones, with the head of the pier bearing 355°, but the holding ground is poor. There are several rocks lying near the pier and boats should approach with care.

8.32 Cabo Nose (53°45'S., 70°08'W.), the S entrance point of Bahia Inutil, is the end of a range of hills covered with vegetation. It is clear of dangers. Pico Nose, 9 miles SSE of the cape, rise to an elevation of 832m.

Punta Cameron, the most salient point in the bay, projects from the S shore 9 miles NE of Cabo Nose. The land rises to a height of 148m, 1.75 miles SSE of the point. Caleta MacKlelland lies 9.5 miles E of Punta Cameron.

Small vessels may anchor off the cove, 0.2 mile from shore in a depth of 6m, sand, good holding ground.

Canal Whiteside is a broad channel that separates Isla Dawson from Tierra de Fuego, and extends from its N entrance between Punta Arska and Cabo Nose to the entrance of Seno Almirantazgo, about 40 miles SSE of Punta Arska.

The fairway is deep and clear of dangers. The W side can be safely approached within 0.25 mile, but shoals extend up to 1.5 miles offshore on the E side.

8.33 Puerto Yartou (53°53'S., 70°08'W.), 8.5 miles S of Cabo Nose, is formed between Punta Chown on the N and Punta Yartou, 1.5 miles farther S.

A chain of islets extend 2 miles NW from Punta Yartou, and a rocky shoal with a depth of 4.9m lies at the NW extremity of these islets. A rock awash lies about 0.3 mile NW of the W islet.

Puerto Yartou is open to W and NW winds which cause a heavy swell. The bottom is generally rocky, with sand and shell in places.

Anchorage in a depth of 15m may be obtained 0.5 mile S of Punta Crown.

Two pyramids, each 2m high, stand 6.75 miles SSW of Punta Yartou. These beacons indicate the parallel of 54°S.

Puerto Arturo is located on the N side of **Punta Carukinca** (54°04'S., 70°04'W.), a low point located 10.5 miles SSE of Punta Yartou.

The port is open to winds between the N and W, which cause a heavy swell.

Isla Carukinca lies 0.75 mile S of Punta Carukinca. Shoal water, with a depth of 10m, extends from Isla Carukinca SE to a point of land about 0.9 mile distant. The islet is steep-to, except for a smaller islet lose W of Isla Carukinca.

There is anchorage off the E side of Isla Dawson, 3 miles S of Punta Arska, in depths of to 30m. The holding ground is sand near the shore and rock and mud farther out.

Valentin, a small mission station, is situated on a cliff opposite the anchorage.

8.34 Punta Kelp (53°48'S., 70°24'W.), the most salient point on the W side of the channel, lies 14 miles SSE of Punta Arska.

Isla Offing, 2 miles SSE of Punta Kelp, is a small islet 44m high, covered with vegetation. It is good mark for identifying Bahía Willes and Bahía Harris. A light is shown from the N end of the island.

Bahía Willes (53°49'S., 70°26'W.) is entered between Punta Kelp and Punta Tern, 2 miles SSW. Good anchorage may be obtained in the bay, in a depth of 27m, mud and shells, best seen on chart.

Bahía Harris lies W of Punta Tern and affords good anchorage at the head of the bay in depths of from 33 to 40m, rock and mud, 183m S of an L-shaped pier, with an oil tank bearing 334° and a water tank bearing 258°.

Punta Arbolada (53°52'S., 70°24'W.) is located 1.75 miles SSE of Punta Tern, and Punta Huinche lies 0.5 mile farther SSE.

Bahía Fox is entered WSW of Punta Huinche. A shoal, with a depth of 5.9m, whose existence is doubtful, lies 0.4 mile SE of Punta Huinche.

Rio Fox, the largest river on Isla Dawson, has formed an extensive sand bank that extends nearly 0.4 mile offshore at the head of the bay. A hill that rises to a height of 178m is located 0.25 mile NW of Punta Huinche.

Large vessels may obtain anchorage in a depth of 20m, sand and shells, with the hill NW of Punta Huinche bearing 028° and the mouth of Rio Fox bearing 311°. Less water than shown on the chart was reported in Bahía Fox.

Bahía No Entres, a small cove 6.5 miles S of Bahía Fox, is about 0.6 mile wide and recedes about 0.7 mile. A shallow rocky bank, covered in part by sand and mud, extends 0.25 mile from the head of the bay.

Vessels with local knowledge may obtain anchorage in depths of 25m, just within a line joining the two entrance points.

8.35 Isla Wickham (54°06'S., 70°23'W.) lies with its N extremity 3.5 miles S of Bahía No Entres. It is about 8 miles long E to W and is about 7 miles wide N to S. The island rises to a height of 790m, 2.25 miles S of its N extremity.

In its S part are remarkable sharp-pointed hill, 704m high, can be seen in clear weather from Puerto del Hambre, about 36 miles NNW.

Canal Meskem, N of Isla Wickham, has a least width of 0.2 mile abreast Isla Tell, 6 miles W of the N extremity of Isla Wickham. The fairway passes N of Isla Tell, and is deep and free of dangers, except for a patch of kelp 0.3 mile N of the N extremity of Isla Wickham which should be given a wide berth. A rock, which dries, lies close off the N shore NE of Punta Huapi, a point located 2 miles SW of the channel's N entrance point.

Puerto Meskem (54°03'S., 70°25'W.), on the N side of Canal Meskem, is entered 1.5 miles W of Punta Huapi. Punta Cannon, the S entrance point of the cove, lies 1.75 miles SW of Punta Huapi. A prominent islet, covered with vegetation, lies 0.4 mile NE of Punta Cannon.

A rock, which covers at HW, lies about 0.2 mile S of the islet and is marked by a beacon.

There is good anchorage in Puerto Meskem in a depth of 29m, firm mud, with the islet bearing 133°. The anchorage is sheltered from NW to NE winds.

Little protection is afforded from SE to SW winds, and although strong winds blow from the SW, no sea is raised.

Vessels should not attempt passage between the kelp obstructed channel that lies between Punta Cannon and the islet NE.

8.36 Seno Owen (Fiordo Owen) (54°00'S., 70°34'W.), about 8 miles long in a NW to SE direction, is 2 miles wide. It has moderate depths over a mud bottom. The head of the inlet is narrow and shoal, the depths decreasing gradually.

Seno Owen is entered NW of Isla Wickham, where Canal Meskem and Canal Anica unite. Several islets and dangers encumber the entrance. Shoals extend about 2 miles NW from the islands and there is much kelp in the bay.

Vessels with local knowledge can obtain anchorage anywhere in Seno Owen, clear of the kelp and shoals in moderate depths, mud bottom.

Seno Brenton (54°09'S., 70°25'W.) located between Isla Wickham and the S part of Isla Dawson. It extends about 9 miles W where it joins Canal Anica off the W side of Isla Wickham. Islas Tuckers are several islets that lie in the SE entrance to Seno Brenton; there is a beacon on the largest islet.

Puerto Choisel (54°07'S., 70°33'W.) located at the NW end of Seno Brenton on the W side, 11 miles from the beacon on Islas Tuckers. The outer part of the cove affords anchorage to vessels with local knowledge in a depth of 20m, mud and sand. The anchorage is protected from NW to NE winds, but is exposed to S and SW winds which are accompanied by violent squalls.

Vessels should moor with their anchors laid out in the direction of the prevailing wind.

There are two prominent islets that lie in the approach to Puerto Choisel. Punta Mahay is the N entrance point of the cove.

Canal Anica (54°05'S., 70°30'W.) is a continuation of Seno Brenton that extends NNW from Punta Mahay. It has a least navigable width of 0.5 mile and the fairway is deep and clear of dangers. There is a rock awash, marked by kelp, about 0.8 mile NE of Punta Mahay, and there are islets and foul ground about 2 miles NNE of the same point.

Vessels may anchor anywhere in Canal Anica, which has a bottom of mud and sand.

8.37 Seno Almirantazgo (54°18'S., 69°30'W.), 23 miles S of Bahía Inutil, has not been fully surveyed. The bay is entered between Punta Carukinca and Cabo Rowlett, 11 miles S. It extends 43 miles SE into the island of Tierra del Fuego.

The N side of the bay has a straight shoreline, but the S side has three deep inlets that from W to E are named Brookes, Ainsworth, and Parry. The sound end in Bahía Azopardo.

Bahía Brookes (54°20'S., 69°50'W.) is entered 7 miles ESE of Cabo Rowlett. It extends 19 miles SSE and there are several

coves on its W side where small vessels with local knowledge can obtain anchorage.

Isla Alta, which is wooded, lies in the entrance to Bahía Brookes, 4.5 miles ESE of Cabo Rowlett. Punta Esperanza lies 2 miles S of Isla Alta.

Caleta Gomez, an anchorage, is entered 1.5 miles SW of Punta Esperanza. Other anchorages are Puerto Hernandez and Caleta Palma which lie 4.5 and 6.5 miles SSE, respectively, of Punta Esperanza. The depths in these anchorages are from 16 to 24m.

Bahía Guerrero, at the head of the bay, is liable to be encumbered by icebergs and is not recommended.

Islotes Corkhill, a group of four islets, lie near the middle of Seno Almirantazgo, 18 miles from the entrance. Vessels can pass either side of this group, but not through it.

Bahía Ainsworth (54°22'S., 69°35'W.) opens SSE of Islotes Corkhill. It lies 11 miles E of Bahía Brookes. This bay is filled with icebergs from a large glacier which extends from the mountains at the head of the bay. There is a reduced anchorage on the W shore, 3 miles inside the mouth in a depth of 25m.

Puerto Toto is about 5 miles ESE of the E entrance to Bahía Ainsworth. It appears to be free of dangers and is deep. The cove is covered by kelp, with only a small channel near the N coast. The cove is entered around a low point of red land on the W side; do not round this point until the houses at the head of the cove are clearly seen.

Bahía Parry is entered E of Punta Morro, about 9 miles SE of Puerto Toto. There is anchorage for small vessels with local knowledge in a cove on the S side of Punta Morro, in a depth of 25m.

Anchorage, protected from SW through NW winds, may be taken in a depth of 24m.

Caleta La Paciencia (54°25'S., 69°04'W.) lies on the N side of Seno Almirantazgo, 5 miles NNE of Punta Morro. There are the remains of a jetty and the ruins of a sawmill.

Isla Tres Mogotes lies near the middle of the bay, 4 miles E of Punta Morro. A beacon is situated in the middle of the N side of the island. Vessels can pass either side of the island.

Anchorage may be obtained in 12m, SE of the jetty.

Bahía Azopardo (54°28'S., 69°00'W.) forms the head of Seno Almirantazgo, 2.5 miles ESE of Isla Tres Mogotes.

There is a disused sawmill and a ruined jetty, 200m long with a depth of 5m at its head.

Anchorage.—The anchorage, known as Caleta Benavente, is in a depth of 20m with the jetty bearing 200°, distant about 0.3 mile.

Paso del Hambre

8.38 Paso del Hambre (Famine Reach) (53°44'S., 70°50'W.) is the continuation of the strait S of Paso Ancho and extends about 19 miles SSW. It is entered between **Punta Carreras** (53°35'S., 70°55'W.) and Cabo Valentin, the NW extremity of Isla Dawson, 14.5 miles E.

Isla Dawson (53°55'S., 70°33'W.), on the E side of Paso del Hambre, is divided into two parts by an isthmus between Bahía Lomos and Seno Owen. The N part of the island is of moderate elevation with gentle slopes.

Cerro Graves, 462m high, is located in this part, 11 miles SSW of Cabo Valentin. The S part of the island is mountainous

and of wild aspect, with deep wooded valleys. It attains an elevation of 944m, 29 miles SSW of Cabo Valentin.

Cabo Valentin (53°34'S., 70°31'W.), the NW extremity of Isla Dawson, is low with a small hummock, 61m high, nearby.

A bank, with depths of 2.7 to 5.5m, extends 2.5 miles N of the cape. The tidal currents run strongly over this bank causing overfalls in a contrary wind which are dangerous to boats.

Punta Stubenrauch lies 10 miles SSW of Cabo Valentin. Two rocks lie 1.25 miles SW of Punta Stubenrauch. They are steep-to on their W side and are about 3m high.

Bahía Lomos (53°50'S., 70°42'W.), entered 5 miles S of Punta Stubenrauch, has not been surveyed. It is sufficiently sheltered from SW, but is exposed to W and NW winds.

From the W entrance point of Bahía Lomos, the shore trends W for about 3 miles to Punta Joaquin. Bahía Amigo, which is open and unsheltered, is entered about 1 mile S of Punta Joaquin.

Cabo San Antonio (53°53'S., 70°54'W.), 2 miles SW of Bahía Amigo, is the W extremity of Isla Dawson. There are a number of islets lying SSW of Cabo San Antonio; Puerto San Antonio is formed by the channel between these islets and Isla Dawson to the NE. The channel is barely 0.3 mile wide. There are several small islets and rocks in it, especially at the NW end. Although Puerto San Antonio appears to be sheltered and is subject to violent squalls and is not recommended.

Puerto Valdes is entered N of Punta Valdes, which lies 2.5 miles SSE of Cabo San Antonio. From the apparent violence of the frequent squalls, it is not advisable to enter the port.

From Punta Valdes the coast of Isla Dawson trends SSE to **Punta Zig Zag** (54°04'S., 70°53'W.), 8.5 miles distant. It forms the E entrance to Canal Magdalena. Punta Cono lies 3.5 miles SSE of Punta Zig Zag.

Punta Cono forms the N entrance point of the W end of Canal Gabriel.

8.39 Bahía Carreras (53°36'S., 70°56'W.) is entered between Punta Carreras, which is low, and a prominent bluff 1.5 miles S.

Arrecife Georgia extends 1.25 miles SE of Punta Carreras, with depths of less than 9m. It dries in places up to 0.325 mile from the point, and is marked by kelp at its seaward end.

Anchorage, though confined, may be obtained about 0.3 mile SW of Punta Carreras, 183m offshore in a depth of 25m, mud and sand. Care should be taken to anchor as soon as that depth is obtained.

Punta Santa Ana (53°38'S., 70°55'W.), 2.5 miles S of Punta Carreras, is the extremity of a narrow promontory which projects SE. A light shown from a square concrete tower, 5m high, situated 0.2 mile WNW of the point.

8.40 Puerto San Juan de la Posesion (Puerto del Hambre) (53°38'S., 70°56'W.) is entered between Punta Santa Ana and Punta San Juan, 1.5 miles SW. The bay recedes 1.5 miles from the entrance, but shoal depths extend more than halfway from its head. A stream flows into the head of the bay and Rio San Juan flows into the bay close N of Punta San Juan. It is fronted by a bar which dries.

A shoal area lies between 0.2 mile and 0.6 mile SE of Punta Santa Ana. There is a depth of 9m at its N end.

Anchorage.—Vessels anchor in the middle of the bay in a depth of 15m, stiff clay, occasionally overlaid by sand, bearing 232°, about 0.5 mile from the lighthouse.

Bahia Voces is entered 3 miles SSW of Punta Santa Ana. From Bahia Voces S to Punta Arbol, about 5 miles, the coast is cliffy and depths are too great for anchoring.

Anchorage may be obtained in depths of 13 to 16m off the mouth of a river which flows into the head of the bay.

Cabo San Isidro (53°47'S., 70°58'W.), 2 miles S of Punta Arbol, has a low, but conspicuous rounded hillock at its extremity. The cape is covered with trees and forms a ridge which extends NNW about 3 miles to Monte Tarn, 818m high, the most conspicuous mountain in the vicinity.

A rocky shoal, covered with kelp, extends 0.2 mile off the cape, and has a rock awash at HW at its outer end.

A shoal, with a depth of about 20m, lies 2 miles SSW of the cape.

A light is shown from a cylindrical tower on Cabo San Isidro.

Caleta Aguila (53°58'S., 70°59'W.) is entered between Cabo San Isidro and a point 0.7 mile SW. A small reef, with an islet, extends 183m SE from the SW entrance point.

Anchorage for small vessels may be obtained at the head of the bay in depths of 18 to 22m, sand and stone. Squalls at times are violent, but the holding ground is good.

From Caleta Aguila to Punta Glascott, 5.5 miles SW, there are several small bays which offer protection in depths of 13 to 22m, for vessels with local knowledge.

Bahia San Nicolas (53°51'S., 71°06'W.) is entered close NE of Punta Glascott. A small wooded islet, 7m high, lies in the middle of the bay 0.4 mile SE of the mouth of a river that flows into the head of the bay.

Anchorage.—The best anchorage for a large vessel is midway between Punta Glascott and the wooded islet in a depth of 20m, mud or clay. Small vessels can anchor closer inshore.

Punta Glascott (53°51'S., 71°06'W.) is the extremity of a range of mountains with several sharp peaks extending NW into the interior. The most prominent summit is Pico Nodoles, 766m high, about 2.2 miles WNW of the point.

Inlets and Passages South of Paso Froward

8.41 The inlets and passages S of the E entrance to Paso Froward are entered W of **Punta Zig Zag** (54°04'S., 70°53'W.), on the SW coast of Isla Dawson.

The passages S of Isla Dawson will be discussed and then the canals and passages that lead S into Tierra del Fuego.

Canal Gabriel is entered from Canal Magdalena and is the NW part of the channel which separates the S side of Isla Dawson from Tierra del Fuego. It is merely a ravine of slate formation and extends precisely in the direction of the strata, with almost parallel shores about 25 miles long.

The channel is 0.5 to 1.5 miles wide, except in the narrows where it is about 183m wide, with a least depth of 10.9m.

Tidal currents in the channel have been estimated to run at a rate of 4 to 5 knots.

The SE end of Canal Gabriel, which is known as Canal Cascada, divides, one part leading N into Seno Almirantazgo, and the other opening into Bahia Fitton. Seno Almirantazgo has been described earlier with Canal Whiteside.

Bahia Fitton may be entered through Canal Cascada, or from N through Canal Whiteside, passing between Cabo Rowlett and **Cabo Expectacion** (54°14'S., 70°12'W.), 4 miles WNW, then SW of Punta Carda, which lies 5.75 miles SSW of Cabo Rowlett. Bahia Fitton extends about 7 miles SE and divides into two arms.

Good anchorage, sheltered from prevailing winds, may be obtained in the cove on the S side of the bay, 3 miles S of Punta Carda. Foul ground extends 0.3 mile offshore and 1.25 miles N of Punta Carda, and a rock, marked by kelp with a depth of less than 2m, lies 1.5 miles NW of the point.

Canal Magdalena

8.42 Canal Magdalena extends S from Estrecho Magallanes to Canal Cockburn. It is entered between **Punta Anxious** (54°07'S., 70°55'W.) and the NE part of Isla Capitan Aracena, 2 miles W.

Punta Anxious is a low, narrow tongue of land, with deep water close inshore. A group of islets lie close NW of Punta Anxious. The W, and largest islet, is marked by a light tower.

Precipitous mountains rise from both shores, especially on the E side.

The W entrance of the channel is backed by a steep mountain 1,158m high, which has a remarkable lump on its summit.

There is a large white patch on the mountain which can be seen at a great distance. Monte Hurt, 1,064m high, rises at the head of Seno Peje, 6.5 miles SSE of Punta Anxious.

Seno Peje, a sound which is deep and whose shore is steep-to, extends 3.5 miles SE from its entrance, which lies between Punta Anxious and Punta Peje, 2.5 miles SSW.

There is a small islet 0.25 mile NW from Punta Peje and numerous rocks lie between the two.

Islote Jumbo lies 2.25 miles S of Punta Peje, 0.3 mile offshore. Three smaller islets and a number of rocks lie between Islote Jumbo and the E shore.

8.43 **Fiordo Keats** (54°18'S., 70°43'W.), on the E side of the channel, is entered between a point 5.25 miles SSE of Punta Peje and Punta Ernesto, 5 miles farther S. An islet lies 1.75 miles ESE of the N entrance point, and rocks fringe the coast NW and SE of the islet. A rock, with a depth of less than 2m, lies in mid-channel 3 miles SE of the islet.

Fiordo Keats extends 32 miles ESE, and about halfway along it divides into two branches, Seno Contra Almirante Martinez leading SSW, and Fiordo Agostini leading SE.

The coasts are mountainous and the waters are apparently deep, presenting no difficulty in navigation, with the exception of the submerged rock located in the middle of the fjord to the SE about 4 miles from Punta Antonio.

Pilotage is compulsory for vessels entering Fiordo Keats. Request for pilots should be sent to Punta Arenas in advance, where they can be embarked.

Fiordo Agostini is entered between **Punta Final** (54°24'S., 70°32'W.) and Punta Elsa, 1.5 miles NE. About 10 miles SE

from the entrance it divides into two arms at Punta Divide, Seno Hyatt to N and Seno Serrano to S.

A group of islets, surrounded by reefs, lie off the S side of Fiordo Agostini, 3 miles WNW of Punta Divide.

Fiordo Agostini runs between the mountains from which numerous glaciers descend; it is renowned for its beauty.

Seno Hyatt, the N arm of Fiordo Agostini, is 7 miles long; near its head are two bays. The N bay is deep, but it is unsafe to approach the glacier nearer than 0.5 mile due to the high waves produced by the falling ice. In the S bay there is a smaller glacier. The S bay has a bar with a depth of 4m.

There is good anchorage in a cove halfway along the N shore of Seno Hyatt in a depth of 35m, sand.

Seno Contra Almirante Martinez, the SSW arm of Fiordo Keats, is entered W of Punta Final, and extends for a distance of 16 miles. This inlet has not been fully surveyed, but it would appear to have a deep even bottom free of dangers. The head of the inlet divides into two arms.

Due to the abundance of kelp and the rocky bottom, it is not recommended to anchor in the SE arm. The S arm has an average depth of 30 to 40m. The E coast is fringed with kelp and a large number of rocks. The coastline throughout is lined with numerous waterfalls.

Anchorage may be obtained in the middle of Caleta Escandallo, 6 miles within the entrance of Seno Contra Almirante Martinez, on the W side, in a depth of 33m, hard mud. The anchorage is with the N entrance point of the cove bearing 299°, about 0.3 mile. The anchorage is sheltered from all winds.

Punta Queta (54°20'S., 70°43'W.) is located on the S shore of Fiordo Keats, 5.5 miles E of Punta Ernesto.

Bahia Queta, entered E of Punta Queta, affords anchorage in a depth of 15m, sand, 0.2 mile S of the E entrance point. The bay has not been surveyed.

The E side of Canal Magdalena continues SW from Punta Ernesto to **Punta Pajarito** (54°21'S., 70°54'W.), 1.5 miles distant and marked by a light, then in a general S direction for 5.5 miles to Punta Gruesa.

This coast is deep and free of dangers. Two glaciers descend from Monte Sarmiento, which rises to a height of 2,234m, 4 miles E of Punta Gruesa.

Monte Sarmiento (54°27'S., 70°50'W.) rises from abroad base, and when seen from the N, the two peaks of its summit appears much like the crater of a volcano, but from the W the two peaks are in line and the volcanic resemblance ceases. It is the most remarkable mountain in the strait. It is covered with perpetual snow and is nearly always enveloped in cloud.

During E winds when the sky is cloudless and with a low temperature, it can be seen clearly from Punta Arenas, 77 miles N.

Monte Buckland (54°27'S., 70°10'W.), about 21 miles E of Monte Sarmiento, is a pyramidal shaped block, 2,042m high, that is covered with snow. Between these mountains the summit is occupied by an extensive glacier.

Seno Magallanes (54°29'S., 70°54'W.), entered between Punta Gruesa and Punta Entrada, 1 mile SW, provides good anchorage for small vessels on its W shore, 3.25 miles S of the entrance. Its coasts are high and steep and its waters deep and

safe. Due to its orientation, winds from the N or S are boxed in and gain great intensity, but do not stir up swells. The depth of the anchorage is 27m, hard mud.

From Seno Magallanes, the E coast of Canal Magdalena turns WNW for a distance of 5 miles to **Punta Piramide** (54°26'S., 71°07'W.), the S entrance point of the E entrance to Canal Cockburn. The point is marked by a light.

There is anchorage in Puerto Imprevisto, a cove located 3.75 miles W of Seno Magallanes, for vessels of medium-size in depths of 17 to 30m, mud, rock and shells, in the middle of the cove. It is surrounded by high and steep hills that protect it from all winds, except from the N.

The harbor is reported as safe. However, there is kelp near the coast and at the entrance, but they do not appear to indicate dangers. There is a watering place in the inner bay, but the coast is foul and full of kelp.

8.44 Puerto Hope (54°08'S., 71°00'W.) is a cove on the W shore of Canal Magdalena opposite Punta Anxious. A rock, marked by kelp and with a depth of less than 1.8m, lies nearly in the middle of the outer part of the cove. Kelp extends N from this rock to the shore.

Anchorage.—Vessels up to 80m long can obtain emergency anchorage 0.19 mile ESE of the rock, in a depth of 20m, sand.

Ensenada Stokes is entered N of **Punta Chubascosa** (54°10'S., 70°58'W.), about 2 miles S of Puerto Hope.

Islotes Rees, three low wooded islets, lie in the entrance to the bay which extends 4.5 miles SSW.

Due to its deep water and violent squalls which descend from the high land surrounding it, no anchorages are recommended.

Bahia Morris (54°15'S., 71°00'W.), 5 miles S of Punta Chubascosa, is 1.5 miles wide at its entrance and recedes about 2 miles to the W. It is the best anchorage in Canals Magdalena and Cockburn. Islotes Entrada, 3m high, lie 1 mile S of the N entrance point. A 14.6m patch lies about 0.3 mile N of the islands. Kelp extends from the patch to the islets. An isolated islet, 14m high, lies 0.7 mile W of the islets.

Bajo Norte, with a depth of 8.8m, lies 0.5 mile ENE of the N entrance to Bahia Morris.

Bajo Sur, which dries and is marked by kelp, lies about 0.5 mile E of Punta Ariadne, the S entrance point of Bahia Morris.

The kelp attached to both Bajo Norte and Bajo Sur is usually submerged by the tidal currents, and is only visible at slack water.

Anchorage.—The recommended anchorage in Bahia Morris is in depths of 31 to 36m, mud and clay, in a position about 0.7 mile WSW of the N entrance point.

Small vessels can anchor in the basin at the head of the bay in depths of 11 to 35m. Squalls are frequent and violent, but the holding ground is good.

Vessels entering the bay should pass between Bajo Norte and Islotes Entrada, keeping about 0.5 mile N of the islets to clear the 14.6m patch which lies in this passage. The passages W of the shoals can not be recommended.

8.45 Isote Cenaria (54°18'S., 70°56'W.), 9m high and marked by a light, lies 2.5 miles SE of Punta Ariadne near the

middle of Canal Magdalena. A reef extends SW from the islet and a 5m shoal, with deep water all around, lies about 1.7 miles SE of the islet.

Vessels navigating Canal Magdalena should pass E of Islote Cenaria. The islet should be given a safe berth of 0.5 mile. The islet is marked by a light.

Isla Laberinto lies 1.5 miles SW of Islote Cenaria, on the W side of Canal Magdalena. Isla Jane lies 1.25 miles farther SW.

There are various rocks and islets between these two islands. Bahia Drew is a small bay entered W of these two islands. It is encumbered by numerous rocks and islets.

Small craft with local knowledge can enter the bay either N of Isla Laberinto or S of Isla Jane.

Bahia Transicion (54°20'S., 71°06'W.) is entered between two points 2.5 miles SW of Isla Jane. It extends about 4 miles NW and would appear to be deep and clear of dangers. It has not been surveyed.

Cabo Pena, 2.5 miles S of Bahia Transicion, is surrounded by kelp.

Cabo Turn (54°24'S., 71°07'W.), low and fronted by kelp, lies 1.25 miles SSW of Cabo Pena. This cape forms the N entrance point of Canal Cockburn, which is discussed in paragraph 9.4 of Pub. 125, Sailing Directions (Enroute) West Coast of South America..

A shoal, with a least depth of 10m and surrounded by eddies, lies 1.5 miles E of Cabo Turn.

Cabo Froward to Western Entrance

8.46 A vessel proceeding W through Estrecho de Magallanes, after rounding Cabo Froward, may expect adverse gales, heavy squalls, thick weather, and an absence of good anchorages due to their depths.

None of the harbors in the region can be considered good, although there are two or three suitable for large vessels.

Between Paso Largo, 60 miles WNW of Cabo Froward, and Cabo Pilar, at the W entrance of the strait, there are many harbors on each side of the strait.

Some are difficult to access, others are so deep as to be of little use as an anchorage, and in others the squalls frequently blow with such violence and from different directions as to make the anchorage untenable.

Usually the anchorage space is restricted and the bottom uneven and rocky. At other times pebbles and stones predominate. In each case the holding ground is poor. It is wise to anchor at the deepest point of the anchorage, where there is no shoal or reef nearby.

Whenever kelp is seen, the bottom is probably rocky with no mud, and more uneven than usual.

The most open anchorages, which appear to be least protected from the prevailing winds, often prove to have the best holding ground, and best suited to ride out heavy squalls.

Paso Froward

8.47 Paso Froward is the continuation of the strait from Paso del Hambre to Paso Ingles which is entered S of Cabo Gallant. Paso Froward extends WSW from Punta Glascott to

Cabo Froward, a distance of 7 miles, then WNW about 28 miles to Cabo Gallant.

The N shore of the pass is bound by Peninsula de Brunswick, and the S shore is bound by the islands Capitan Aracena, Clarence, and Cayetano, in that order from E to W.

Cabo Froward (53°54'S., 71°18'W.), the S extremity of the continent, lies nearly in the center of Estrecho de Magallanes. The cape rises abruptly to an elevation of 360m. Monte Victoria, located 2.5 miles NNW of the cape, rises to a height of 877m.

A light is shown from a white concrete tower, 2.7m high, situated on the cape. Cruz de los Mares, a prominent white metal cross 24m high, stands on the summit of Cabo Froward.

From Cabo Froward to Cabo Holland, 16 miles WNW, the shore is high and steep-to. The only anchorages along this coast are Bahia Snug and Bahia Woods.

Bahia Snug (53°51'S., 71°26'W.), about 5 miles WNW of Cabo Froward, affords an excellent berth although the anchorage is open. Islote Lambert, 12m high, and the rocks located NNW of the islet, provide shelter from any sea that may get up. There is ample room and no squalls are experienced.

The best berth for anchoring is with Islote Lambert bearing 259°, 0.2 mile distant, in a depth of 14m, mud. There is space, with good holding ground, farther E. The islet is a good guide for anchoring, but the outer edge of the shore bank is steep-to.

The ebb current, running E, is strong at the anchorage during W winds.

From Bahia Snug to Bahia Woods, a distance of about 7 miles WNW, the shore is straight and steep-to.

Bahia Woods is a cove at the SE end of **Cabo Holland** (53°49'S., 71°38'W.), a bold, high, conspicuous headland.

Foul ground extends 183m S and SE of the E extremity of Cabo Holland. Roca Esk, which dries, lies on the SE edge of the foul ground.

Rio San Jose flows into the strait about 1 mile ENE of Cabo Holland. A rock, which dries, lies 0.25 mile E of the cape on the edge of the bank extending from the mouth of the river.

Anchorage may be taken in 15 to 20m, with Cabo Holland bearing 320°, at a distance of 0.3 to 0.5 mile.

Anchorage for smaller vessels may be taken in a depth of 11 to 14m, with the cape bearing 315°, distant about 0.2 mile, or in 30m with the cape bearing 250°, 0.14 mile distant.

Tidal currents off Cabo Holland are often strong, and there is an eddy E of the point.

Bahia Andres, 5 miles WNW of Bahia Wood, affords anchorage at the NW end of Cabo Holland, but it is exposed to the prevailing winds and should only be used in fine weather.

8.48 Cabo Coventry (53°45'S., 71°49'W.), 2.75 miles NW of Bahia Andres, is 81m high. Monte de Tres Picos is a detached mountain rising to a height of 1,127m, 5.75 miles NW of Cabo Coventry. There is a depth of 31m about 2 miles S of Cabo Coventry.

Bahia Cordes (53°43'S., 71°54'W.) is entered between Punta West and Islote Mussel, 0.65 mile E. The islet is joined to the E shore by a chain of above and below-water rocks. The entrance can be identified by Monte de Tres Picos and Islote Mussel, which is a bright green colored islet 8m high.

Anchorage.—Temporary anchorage can be taken in 13m, with Isote Mussel bearing 056° and Punta West bearing 311°.

Bahia Fortescue (53°41'S., 72°00'W.) is entered between Punta Peterel, 2 miles NW of Bahia Cordes, and Punta Sur West, 1.5 miles W. It is one of the best anchorages in the strait. The bay is spacious, sheltered, easy of access, and has moderate depths. A light, shown from a 5m high white pillar that is difficult to see from seaward, is exhibited close NE of Punta Sur West.

Isla Wigwam, 12m high, lies at the head of the bay. Isote Cross, close S of the island, is 2.1m high.

A shoal, composed of rocks and shells with a depth of 11m, lies 0.8 mile E of Bahia Fortescue light.

The best anchorage in the bay is with Isote Cross bearing between 334° and 053°, distant about 0.1 to 0.2 mile, in depths of 10 to 15m. It is recommended not to anchor close to the W shore as the squalls are more uncertain in their direction and the holding ground is not as good.

Care is necessary when entering Bahia Fortescue during springs, as the W tidal current sets strongly toward Cabo Gallant, and the tidal current running E sets directly toward and around Punta Peterel.

Caleta Gallant is a sheltered basin entered E of Isla Wigwam. It is entered by a narrow channel with a depth of 5m and affords an excellent anchorage to small vessels with local knowledge, in a depth of 6m, mud.

Cabo Gallant (53°42'S., 72°02'W.), a massive, steep-to cape 25m high, is located about 0.3 mile WSW of Punta Sur West and is very prominent from the E.

8.49 From Canal Magdalena the S shore of Paso Froward, extends WNW about 45 miles to Cabo Edgeworth and is irregularly shaped and much indented by numerous channels and bays.

Caleta Beaubasin (54°05'S., 71°03'W.), entered 1.5 miles NW of the NE extremity of Isla Capitan Aracena, may be recognized by Isote Periagua, a small, rocky islet 1.25 miles NNW of the entrance, and by the mountain 2.5 miles SSW of the inlet. The entrance is narrow with a least depth of 5m. Inside there are depths of 9m. The cove provides anchorage for small vessels entering or leaving Canal Magdalena.

Isla Peak and Isla Harrison lie 3 miles WNW and 5.5 miles W, respectively, of the entrance to Caleta Beaubasin. These islands lie in the entrance to Bahia Inman and Ensenada Staples. Two islets lie at the head of Bahia Inman, 4.5 miles S of Isla Peak.

Anchorage may be obtained N of these islets in a depth of 29m, mud. Ensenada Staples lies 2 miles W of Bahia Inman. It should only be entered by vessels with local knowledge, as it has not been surveyed.

Seno Lyell is entered W of a point 5.5 mile NW of Punta Crown, the N extremity of Isla Harrison. Islotes Dos Hermanos, two prominent islets, lie in the middle of the entrance to the bay.

Puerto Kempe, on the W side of Seno Lyell, 2 miles SSW of Islotes Dos Hermanos, is difficult of access but affords anchorage to vessels with local knowledge. It can be easily recognized by the waterfall at its head.

Punta Hetterley (53°57'S., 71°26'W.) is the W entrance point to Seno Lyell. Punta Olvido lies 3 miles W of Punta Hetterley, on the W side of Ensenada Petite.

Seno Pedro, entered 6 miles W of Punta Hetterley, is the N part of Canal Acwalisnan, which separates Isla Capitan Aracena from Isla Clarence.

Canal Acwalisnan, with a depth of 9m in the narrows, leads into Seno Dyneley. A rock, awash, lies in the middle of the channel, 7 miles within the entrance to Seno Pedro.

Bahia Bell is entered W of Punta Taylor, 6 miles WNW of Canal Acwalisnan.

Caleta Bradley, on the W side of Bahia Bell, is a convenient anchorage to a vessel with local knowledge. It bears WSW of Punta Taylor and may be recognized by a small, round, green hill forming the N point of the cove. The anchorage is in 31m.

8.50 Monte Pond (53°52'S., 71°55'W.), 762m high, is a conspicuous double-peaked hill, located 1.75 miles S of Cabo Inglefield, the N extremity of Isla Clarence. One of the summits is visible from the E as soon as it opens Cabo Froward.

Bahia Simon, entered between Cabo Inglefield and Punta Elvira, 4 miles WNW, separates the E side of Isla Cayetano from Isla Clarence. It extends 6 miles SSW and is studded with islands, islets, and rocks. Isla Castellano, 235m high, lies in the middle of the outer part of the bay.

Isla Burgess, at the head of Bahia Simon, has a narrow channel on either side, giving access to the head of Canal de San Miguel. This canal leads 5 miles WNW along the S side of Isla Cayetano into Canal Barbara. The channel W of Isla Cayetano is preferred to the channel E of the island.

Puerto Langara, 3.25 miles S of Punta Elvira, on the E coast of Isla Cayetano, trends in a NW direction.

Anchorage for small vessels with local knowledge may be taken in 14m at the head of the inlet, or in a depth of 9m in a cove on the N side of the inlet.

Canal Barbara (53°50'S., 72°11'W.) is entered between Isla Cayetano and Cabo Edgeworth, about 2 miles NW. It separates Isla Cayetano from Isla Santa Ines and leads S to Canal Cockburn. For further details see Pub. 125, Sailing Directions (Enroute) West Coast of South America.

Paso Ingles

8.51 Paso Ingles is a continuation of the strait between Cabo Gallant and **Punta Arauz** (53°32'S., 72°21'W.), about 15 miles NW.

The weather in this part is unstable due to two air masses of different characteristics meeting, one from the main strait and the other coming from the NNW down Canal Jeronimo.

Violent squalls with heavy rain and low clouds may reduce visibility to zero.

The tidal currents increase as the channel narrows and attain a rate of 2 knots. These, combined with the winds, tend to set a vessel S onto Isla Carlos III. Therefore, special care must be taken at night and during heavy squalls.

Regulations.—The following regulations apply to vessels transiting Paso Ingles and Paso Tortuoso:

1. One hour before approaching Cabo Crosstide (53°37'S., 72°25'W.), vessels must report their position on

VHF channel 16 and 2182 kHz and continue reporting at 10 minute intervals.

2. Vessels should navigate, whenever possible, on the starboard side of the centerline of the channel.

3. Vessels over 200m long and all VLCCs have the right-of-way. The passage of these vessels will be transmitted by the Maritime Authority.

4. Navigation lights should be shown at all times.

8.52 The coast between Cabo Gallant and Canal Jeronimo, 15 miles NW, is backed by towering mountains. Monte Cross, 750m high, located 1.75 miles NNW of Cabo Gallant, is the most prominent. A large portion of the coast is fringed with kelp and should not be approached closer than 0.3 mile.

From Cabo Gallant, the coast trends in a NW direction about 8 miles to **Punta Pasaje** (53°38'S., 72°12'W.).

A shoal, with a depth of 4.5m and marked by kelp, lies about 0.3 WSW of the point. A rock, with a depth of 3.7m, lies 0.25 mile SSE of the point.

Bahia Isabel is entered N of Punta Pasaje. The bay extends on either side of a stream that flows out at its head.

Anchorage may be obtained in a depth of 24 to 29m, 0.75 mile NNW of Punta Pasaje. It is a good anchorage in E winds, but is exposed to winds from the W.

The dangers off Punta Pasaje are reported to project farther into the strait than charted. The point should be given a wide berth.

Punta York (53°35'S., 72°17'W.) is located 4.5 miles NW of Punta Pasaje; shoals and kelp extend 0.5 mile ESE of the point.

Bahia Albuquerque is located on the SE of Punta York and is encumbered by the shoal described above. There is a 3.5m shoal spot marked by kelp near the head of the bay.

Rada York is situated off the mouth of Rio Batchelor, 1.25 miles NNW of Punta York.

A rock, awash and marked by kelp, lies about 0.5 mile SSE of the river mouth, 183m offshore.

As the tidal currents run strongly through Paso Tortuoso and Canal Jeronimo, a vessel lying in this roadstead, even during light winds, will sheer uncomfortably. It is exposed to the prevailing W winds and is subject to violent squalls coming from W.

Rocas Craster, with a depth of 6m, lie 0.7 mile W of the mouth of Rio Batchelor. They consist of two steep-to rocks, about 0.1 mile apart.

Islote Cohorn (53°33'S., 72°20'W.), 6m high, lies on a coastal bank about 0.6 mile NNW of Rocas Craster. A light, shown from a cylindrical tower 8m high, is situated on the islet.

A depth of 19.5m lies about 0.8 mile WSW of Islote Cohorn Light.

Punta Arauz (53°32'S., 72°21'W.), a low point with rocks and foul ground extending 0.3 mile NW from it, is located just over 1 mile NW of Islote Cohorn.

8.53 The SW side of Paso Ingles is formed by islands and islets that are described in order from SE to NW. There are passes between these islands that will be described later.

Islas Charles (53°44'S., 72°07'W.), midway between Cabo Gallant and Cabo Edgeworth, 6.75 miles SSW, consists of three islands with several islets off their SE side.

Punta Jacquinot, 2.5 miles SW of Cabo Gallant, is the N extremity of the E island. Marca Wallis (Wallis Mark), a conspicuous white patch, is located 0.5 mile SE of Punta Jacquinot. The islets and rocks off the E extremity of the E island rise as high as 85m.

The three main islands of Islas Charles are separated by Paso Norte, Paso Sureste, and Paso Oeste.

A shoal, with a depth of 3m, lies in the middle of Paso Norte. It lies on the E edge of a bank extending from the W island.

Bahia Tres Pasos is located at the junction of the three channels, about 1 mile SSW of Punta Jacquinot. It may be used for shelter in an emergency. Vessels enter by Paso Norte or Paso Oeste. Paso Sureste is too narrow.

Isla Monmouth (53°42'S., 72°11'W.), 154m high, lies 5.5 miles W of Cabo Gallant. Isla James is the N of two islets located 0.5 mile W of Isla Monmouth. A shoal, marked by kelp, lies about 0.9 mile WSW of Isla James.

Rocas Rupert (53°40'S., 72°11'W.), 1.5 miles N of Isla Monmouth, are two rocks. The NE rock is 19m high.

Isla Rupert (53°40'S., 72°12'W.), 109m high, lies about 0.6 mile NW of Rocas Rupert.

Foul ground extends 0.25 mile NW from the island and an isolated rock, with a depth of less than 2m and marked by kelp, lies about 0.3 mile S of the island.

A light shown from a cylindrical tower, 2.1m high, is situated on the NE extremity of the island.

A dangerous rock (position approximate) has been reported to lie 0.75 of a mile NW of Isla Rupert.

A bank, with depths of 25m, extends NW from Isla Rupert to Isla Carlos III, 1.25 miles distant.

The bank is steep-to and the tidal currents set across it a rate of 3 knots.

Isla Carlos III (53°37'S., 72°20'W.) is a wooded islet, 8.75 miles long in a NW to SE direction, and is about 4 miles wide. It is about 439m in height. Punta Ballena is its SE extremity and Cabo Crosstide is the NW extremity.

The island is separated from Peninsula Ulloa by Canal David, which has a least width of about 0.3 mile.

Bahia Mussel, on the N coast of Isla Carlos III, is entered W of Cabo Middleton, about 3 miles N of Punta Ballena. Rocas Dessant, marked by kelp with a least depth of 1.7m, lie in the entrance to the bay, about 0.6 mile NW of Cabo Middleton.

Bahia Mussel is deep and sheltered, but the bottom is stony and uneven. It is not recommended as an anchorage.

8.54 Isla el Bonete (53°35'S., 72°21'W.), 41m high, lies about 0.2 mile offshore, 2.25 miles NW of Bahia Mussel.

Islote el Bonetito, 17m high, lies 0.3 mile farther NW. The depths are great and the tidal currents are strong nearby.

Bahia Tilly is entered between Punta Rowe, 1.25 miles WNW of Islote el Bonetito, and Punta Merrill, 0.25 mile farther WNW. The bay extends nearly 1 mile SW.

A moderate-sized vessel may anchor in the middle of the bay or a little farther in, where depths of 32 to 36m, mud, will be found. When entering the bay, particular attention must be paid to the steering of the vessel, for the tidal currents run strongly across the entrance.

Cabo Crosstide (53°37'S., 72°25'W.), 1.25 miles NW of Punta Merrill, is massive and steep, with deep water all around it. The currents here, at the NW extremity of Isla Carlos III, are quite strong. They produce violent seas, chopiness, and whirlpools. A light, shown from a tower 5.5m high, is situated on Cabo Crosstide.

The time of the turn of tidal currents in this stretch of the strait is irregular because of the meeting of the current from Canal Jeronimo with those of Paso Ingles and Paso Tortuoso.

Strong overfalls and tide rips are produced and the currents attain a rate of 3.5 knots. On the N side of Paso Ingles, there is an eddy setting W during the time of ebb, which sets E.

Cabo Edgeworth to Mogote del Morrion

8.55 From **Cabo Edgeworth** (53°48'S., 72°09'W.), the coast extends in a NW direction for 17 miles to Mogote del Morrion. This coast along the NE side of Isla Santa Ines is indented by numerous bays and inlets, of which only one affords an anchorage.

Bahia Choiseul and Bahia Nash lie 4.5 and 9 miles NW, respectively, of Cabo Edgeworth. Bahia Choiseul is a large shoal bay full of islets and rocks. It has not been fully examined. Bahia Nash is similarly impeded with islets and rocks; neither of the bays afford an anchorage.

Seno Ballena, on the S side of Peninsula Ulloa, is entered between Bahia Nash and the SE end of Canal David. It is flanked by mountains and extends 7 miles W. A valley, with a large glacier, lies at its head.

Anchorage may be obtained on the W side of the entrance by vessels with local knowledge in a depth of 25m off a small cove with a sandy beach.

Canal David, between Isla Carlos III and Peninsula Ulloa, joins Paso Tortuoso between Cabo Crosstide and Mogote del Morrion. Although the channel is deep, it is considered dangerous and should only be used with local knowledge.

Bahia Galiano and Bahia Ponce are entered 3.25 and 4 miles, respectively, NW of Seno Ballena; they lie on the SW side of Canal David.

The mouth of each of these bays is encumbered with rocks and islets; neither have been examined. An isolated rock, with a depth of 3.5m, lies in Canal David, 0.5 mile N of the E entrance point of Bahia Galiano.

Mogote del Morrion (53°35'S., 72°27'W.) lies close offshore, 0.75 mile N of Bahia Ponce. This islet lies on a shoal bank on the W side of the N entrance to Canal David.

Paso Tortuoso

8.56 Paso Tortuoso is a continuation of the strait from Paso Ingles to Paso Largo, a distance of about 9 miles WNW.

The N shore of the channel extends from **Punta Arauz** (53°32'S., 72°21'W.) to Cabo False Quod, 8 miles WNW. Regulations for vessels transiting Paso Ingles and Paso Tortuoso are given in paragraph 8.51.

Canal Jeronimo, entered between Punta Arauz and Punta San Jeronimo, 1.25 miles W, leads to Seno Otway.

The navigable channels and bays N of the strait will be described at the end of the sector.

Punta San Jeronimo is the SE extremity of the Peninsula Cordova and of the Isla Riesco.

From Punta San Jeronimo, the coast trends 3.25 miles W to Punta Isabel then WNW to Bahia Borja. Roca Anson, with a depth of 3.5m, lies on the N side of the channel, 1 mile SW of Punta San Jeronimo. The kelp on this rock only shows at slack water as it is run under by the tidal currents. The rock is marked by a buoy.

Bahia Borja (53°32'S., 72°30'W.) may be identified by Isla Borja Grande, 30m high, located 0.75 mile SW of Punta Isabel. Islote Borja Chica, surrounded by kelp, lies 0.19 mile SW of Isla Borja Grande. There is foul ground between the two islets. Islotes Ortiz lie between Isla Borja Grande and Punta Rosario, 0.35 mile N. The entire area between the islet and point is foul.

Bahia Borja anchorage, one of best in the strait, is sheltered from W and SW gales which usually prevail, but is open to SE winds which rarely blow here. The anchorage should be approached with the head of the bay bearing 325° and the anchor is let go when Islote Borja Chica bears 201°, in a depth of 25 to 30m, sand and shells.

Roca Crooked (53°33'S., 72°31'W.), with a depth of less than 2m and marked by kelp, lies 0.5 mile offshore, 0.7 mile WSW of Islote Borja Chica. A lighted buoy lies close S of the rock..

Cabo Quod (53°32'S., 72°33'W.), 2 miles W of Isla Borja Grande, 244m high, is unmistakable to vessels coming from the E as it appears to have a cut in its summit. Islote Beware, 8m high, lies 0.35 mile W of Cabo Quod.

Cabo Falso Quod, 259m high, is located 1.5 miles NW of Cabo Quod. When approaching from the W at night or in thick weather, care is necessary to avoid confusing the two capes which are similar. Cabo Quod can be identified by Islote Beware which lies close W.

Bahia Barcelo, entered between Cabo Quod and Cabo Falso Quod, extends 2 miles NNE from its entrance. The bay is filled with islets and kelp and does not afford safe anchorage.

8.57 From Mogote del Morrion the coast trends in a WNW direction 8.5 miles to Isla Spider, along the N shore of Peninsula Ulloa.

Cerro el Morrion (53°34'S., 72°32'W.) is a remarkable promontory, 335m high, located 2.75 miles WNW of Mogote del Morrion. The outer face is perpendicular, bare, and of a light clay color with a large white patch. It forms an excellent landmark.

Bahia Riders is a cove entered 1.75 miles WNW of Mogote del Morrion. There are islets and foul ground close off the E entrance; it does not appear to offer an anchorage.

Bahia Butler, accessible to small craft with local knowledge, is entered 0.75 miles W of Cerro el Morrion. There is a sheltered anchorage on the W side over a bottom of rock, partially covered with mud. There is a waterfall on the S shore of the cove.

Bahia Chance is entered close W of Bahia Butler; Bahia Mass is entered 2 miles farther NW. These two bays are unsuitable for anchorage.

Caleta White, close NW of Bahia Mass, affords anchorage to vessels with local knowledge in a depth of 27m, mud.

Isla Spider (53°32'S., 72°41'W.) lies off the NW extremity of Peninsula Ulloa, 1.75 miles NW of Caleta White. Foul ground extends about 0.6 mile WSW from the island into the entrance of Seno de las Nieve.

Paso Largo

8.58 Paso Largo is a continuation of the strait, and extends from the NW extremity of Peninsula Ulloa to Cabo Lunes, a distance of about 34 miles. The N side of the reach is formed by Peninsula Cordova and the S shore is formed by the islands Santa Ines and Desolation.

The weather in this reach is frequently so thick that although it is only 2 or 3 miles wide, one shore can not be seen from the other because of the mist. Rain squalls often blow along the land while it is comparatively clear in the middle of the reach.

There is less rain with the wind from the SW quarter than when it is from the NW, but it is very capricious. A clear, bright morning is usually followed by a stormy and wet day, the change generally setting in before noon.

8.59 From **Cabo Falso Quod** (53°31'S., 72°35'W.) the coast trends in a NW direction, 14.5 miles to Fondeadero Field.

The coast is indented with numerous small coves and various bays. Few of these inlets have value as an anchorage.

Bahia Osorno, entered N of Cabo Falso Quod, is exposed to W winds and does not afford an anchorage. Islotes Osorno lie 1 mile NW of Cabo Falso Quod and 0.25 to 0.35 mile offshore. The W islet of these two is 4.5m high.

Bahia Langara is entered close N of Islotes Osorno and is not recommended even as a temporary anchorage. Seno del Leon is a narrow inlet, 2.5 miles long. It lies 1 mile NW of Bahia Langara.

Bahia Arce, Bahia Good Luck, and Caleta Villena lie 1.25, 2, and 4 miles NW, respectively, of Seno del Leon.

Bahia Guirior (53°25'S., 72°47'W.) is entered close W of Caleta Villena and extends 2 miles N from the strait. A rock, with a depth of 1.8m and covered with kelp, lies 1.75 miles within the entrance.

A small vessel with local knowledge can anchor in a depth of 3.6m, mud and shells, 0.2 mile SW of the rock.

Cabo Notch (53°26'S., 72°47'W.) is a conspicuous rock rising perpendicularly from the sea to a height of 119m, and forms the extremity of the peninsula that separates Bahia Guirior from Bahia Paulina.

Islotes Skinner, 1.5 miles NW of Cabo Notch is little more than rocks, 8m high, lying 0.25 mile offshore. A sunken rock, marked by kelp, lies 0.2 mile W of them. A light is shown from the S islet.

Bahia Paulina, on the W side of Cabo Notch, is entered between Islotes Skinner and Punta Hill, 4 miles WNW. Caleta Notch lies within the bay. Isote Chope, covered with moss and grass and always appearing green, lies in the middle of the bay, 1.75 miles NW of Islotes Skinner.

Bahia Paulina is partially encumbered with islets and rocks, and although there are considerable depths on its W side, it is so foul that it is not considered safe to anchor there.

Caleta Notch is entered from the NE part of Bahia Paulina. It is an excellent harbor, but the approach to the anchorage is

intricate and passes over a shoal, with a depth of 3.4m, that lies between two islets, 114m apart.

Bahia Ventisquero is entered 0.5 mile NNW of Punta Hill, which is steep and bold and rises to a height of 579m. The bay extends 1.75 miles ENE.

8.60 Fondeadero Field (53°22'S., 72°55'W.) is situated in the middle of the outer bay of Bahia Ventisquero, S of several islets. Isla Rock, with a summit that rises to 169m, lies in the middle of the bay.

Punta Little, on the island, lies 0.4 mile WSW of its summit. Isote Sombrero, 12m high, lies nearly 0.3 mile W of Punta Little, and Isla Aris is the farthest S of the islets in the bay. Its N part lies about 0.1 mile W of Isote Sombrero.

The anchorage, only recommended for vessels up to 70m in length, may be approached with Punta Little and the peak of Isla Rock in line bearing 073°.

When anchoring here in heavy weather, a vessel should moor; the port anchor should be let go with Isla Aris abeam, followed by the starboard anchor as convenient. The holding ground is excellent in a depth of 11 to 22m, sand and mud.

8.61 From Isla Spider the coast extends 13 miles NW to Isote Stella. It is indented by two sounds and several small inlets that extend S into Isla Desolacion.

Seno de Las Nieves is entered between **Isla Spider** (53°32'S., 72°55'W.) and a point 1.5 miles WNW. The sound has not been examined in detail and should only be entered by vessels with local knowledge. Caleta Basin, 1.25 miles within the W entrance and Puerto Black Mud, 0.75 mile farther S, afford anchorage as does a cove with a depth of 16m, stones, which lies at the N end of a small peninsula S of Puerto Black Mud. A fourth cove lies on the E side of the sound, 3 miles from its head, and has depths of 16 to 22m, stones.

Bahia Swallow (53°30'S., 72°46'W.), which may be used in case of an emergency, is entered 2.5 miles NW of Isla Spider. Islotes Wallis lie 0.175 mile NNW of the E entrance point of the bay. Isla Carteret lies on the W side of the bay and separates Bahia Swallow from Bahia Condesa.

A group of rocks, marked by kelp, lies close SE of the E extremity of Isla Carteret. These rocks can be passed on either side. A 12.8m shoal, marked by kelp, lies about 0.3 mile SW of the group of rocks.

Anchorage for medium-sized vessels may be obtained about 0.1 mile SW of the group of rocks in a depth of 31m. The bay should only be entered by vessels with local knowledge.

Bahia Condesa is entered W of Isla Carteret, and Bahia Stewart lies 1 mile NW of Bahia Condesa. These bays should only be entered by small vessels with local knowledge.

8.62 Cabo Hunter (53°27'S., 72°52'W.), 3.25 miles NW of Bahia Stewart, is the E entrance point of Seno Nevado. It rises steeply to a height of 275m. There is a sunken rock, marked by kelp, close N of the cape.

Seno Nevado is entered W of Cabo Hunter. It extends 13 miles S into Isla Santa Ines, and is quite deep. The shores of the sound, as far as they have been examined, are clear of dangers.

Bahia Havergal, on the W side of the sound, is entered 2.75 miles SSW of Cabo Hunter. The bay extends 3.25 miles SSW

from its entrance. Its outer part is divided into 2 parts by Isla Arthur, which is about 2 miles long in a NNE to SSW direction. The position of the bay is marked by a large glacier that descends from Monte Wharton, which attains an elevation of 1,327m, 6 miles SSW of Cabo Hunter. Cerro Moraine rises to a height of 162m at the head of the arm.

Bahia Havergal Occidental, W of Isla Arthur, affords anchorage to medium-sized vessels with local knowledge in a depth of about 16m, muddy sand over loose stones, poor holding ground.

Bahia Yacht, a cove on the W side of Bahia Havergal Occidental, is suitable only for small craft. Punta Let-Go, on the S side of the cove 0.25 mile within the entrance, is a convenient mark for vessels anchoring in Bahia Havergal Oriental.

Bahia Havergal Oriental (53°30'S., 72°55'W.), on the E side of Isla Arthur, provides anchorage for a vessel not more than 60m in length, in a depth of 40m, stiff black mud, with Cerro Moraine bearing 212° and Punta Let-Go, seen over the isthmus in the middle of Isla Arthur, bearing 304°.

The wind always blows either in or out of this arm, and though the squalls change their direction from N to S, they are not as violent as those in the W arm.

Caleta Humphrey lies 2.75 miles NW of Cabo Hunter, and **Islote Stella** (53°24'S., 72°59'W.) lies on a shoal bank, 2.5 miles farther NW.

8.63 The N shore of Paso Largo continues in a NW direction from Fondeadero Field to Punta Havannah, a distance of 19 miles. The mountain range that backs this part of the coast is covered with snow and is the highest on Peninsula Cordova. Monte Wyndham, on this range, rises to a height of 1,219m, 3 miles N of the head of Bahia Ventisquero.

Caleta Ginn, about 4 miles NNW of Fondeadero Field, is small and unsheltered.

A deep ravine extends into the hills from the cove, up to the lower part of a huge glacier.

Caleta Playa Parda, 1.25 miles NW of Caleta Ginn, has a basin at its head approached through a narrow passage. The inner basin is landlocked and sheltered, although very restricted. Vessels under 50m in length, with local knowledge, may anchor in the cove.

Isla Shelter (53°19'S., 73°02'W.) is a well-defined steep-to island that rises to a height of 116m. It lies about 0.2 mile S of the W entrance point of Caleta Playa Parda, but this channel has not been closely examined.

An above-water rock lies about 0.2 mile off the NE side of the island, and a rock, with a depth of less than 2m, lies 0.3 mile WNW of the NW side of the island.

Estero Playa Parda, entered N of Isla Shelter, extends 2 miles NNW. It is deep to within 91m of its head where there is a sandy beach, backed by flat ground.

Caleta Marion, a deep cove with an irregular rocky bottom, is entered 1.5 miles NNW of Isla Shelter. Islote Beagle, 18m high, lies close off the W entrance point of the cove.

Caleta Estrella, 1.5 miles WNW of Caleta Marion, is encumbered by rocks and Caleta Pollard, entered 3 miles farther WNW, is too deep and narrow for anchoring.

8.64 Cabo Cooper Key (53°15'S., 73°13'W.), just W of Caleta Pollard, is rounded and difficult to recognize from the W, but from the E it appears as a bold headland. After rounding Cabo Quod, it will be visible in clear weather and appears to be the termination of Paso Largo. A light is situated on the cape and is shown from a cylindrical iron tower, 2m high.

Bahia Campana, entered 3.25 miles NW of Cabo Cooper Key, recedes 2.25 miles ESE. It is surrounded by bare gray hills, and affords no anchorage as the depths are too great and the bottom is rocky.

Bahia Hannant, entered close N of Bahia Campana, has deep water throughout. Monte Oscuro, a crag 319m high, is located 0.5 mile E of the bay. It is distinctly darker than the other rocky summits nearby, the general color is light gray.

Roca Negra, awash, lies 0.25 mile S of the NW entrance point to Bahia Hannant; it is steep-to and marked by kelp.

Punta Havannah (Punta Habana) (53°10'S., 73°19'W.), 2.5 miles NW of Roca Negra and 7.25 miles NW of Cabo Cooper Key, is a sloping projection of bare white rocks. It is the W limit of Paso Largo on the N side and is also the extremity of Peninsula Cordova.

8.65 Cabo Lunes, situated about 11 miles NW of Islote Stella, is a bold cape that forms the W limit of Paso Largo.

The inlets and passages on this coast are discussed, in order, from SE to NW.

Bahia Arathoon (53°25'S., 73°00'W.), entered 0.75 mile W of Islote Stella, divides into two arms 1.25 miles within the entrance. The W arm is too deep for anchoring. The E arm extends 5 miles to Puerto Marsh, at the head of the bay, and is also deep.

Punta Doyle, 1.75 miles within the entrance of Bahia Arathoon, is the E extremity of the peninsula which separates the arms of the bay. A rock, with a depth of less than 2m in the middle of the E arm, lies 0.2 mile E of Punta Doyle.

Puerto Marsh (53°23'S., 73°00'W.) is entered 2.5 miles S from the head of the E arm.

Punta Drew, located on the E arm 2 miles S of Punta Doyle, is the entrance point to Puerto Marsh. Punta Henry lies 0.4 mile S of Punta Drew.

Islote Steele is located near the head of the bay, 1.5 miles SSE of Punta Henry. Rocas Blancas, 1.5m high, lie close off the E shore of the outer basin, 0.8 mile SSE of Punta Henry.

Anchorage may be obtained in the outer basin by a vessel of moderate size in a depth of 18m, muddy sand over rock, with Islote Steele bearing 148° and Rocas Blancas bearing 096°.

Caleta Bates (53°23'S., 73°02'W.), about 1 mile NW of Bahia Arathoon, is too narrow to be of service to vessels.

Canal Abra, 1 mile NW of Caleta Bates, connects Estrecho de Magallanes with Bahia Otway and the Pacific Ocean. An incomplete examination has shown it to be a fine navigable passage, but no anchorages were found.

Isla Abra, which stands in the center of the entrance is 91m high and covered with vegetation. The entrance is 2 miles wide, but it quickly narrows to 0.75 mile. There are several islands in the channel. One of them, Isla Maycock, lies about 6 miles within the entrance. A rock, with less than 2m, lies in the fairway 0.75 mile SE of Isla Maycock.

Punta Aldea (53°21'S., 73°05'W.), the NW entrance point of Canal Abra, is a bold headland 183m high, which rises to 472m 1.25 miles farther WSW.

Estero Rocaloso, entered 3.75 miles WNW of Punta Aldea, is narrow and recedes in a SW direction from the S part of a bay formed by the projection of Punta Casper.

Punta Harry, 0.8 mile SW of Punta Casper, is the NW entrance point. Isote Ellen, which is small and rocky, lies about 0.5 mile S of Punta Casper. There are two rocks, awash, 0.6 mile ESE of the islet.

Bahia Underhill, 3.5 miles NW of Punta Casper, affords no anchorage.

8.66 Islotes Pritchard (53°15'S., 73°18'W.) are located 2.25 miles NNW from the mouth of Bahia Underhill. Isla Wellard lies in the entrance to Estero Cormorant, close S of Islotes Pritchard.

Estero Cormorant, entered S of Isla Wellard, extends SW then WNW for a distance of 3 miles. It is a deep body of water.

Bahia Lewis is entered W of Islotes Pritchard and runs NW under Monte Posesion, which is 458m high.

Puerto Angosto (53°13'S., 73°21'W.) is entered S of Isote Entry, which is 9m high. A rock awash, marked by kelp, lies 91m SE of the islet. The best mark for identifying the bay is Monte Posesion, which usually stands out well.

Punta Wise, the S entrance point of Puerto Angosto, lies about 0.1 mile S of Isote Entry, and is fringed with kelp. Isla Pasaje lies close off the N shore of the bay, 0.5 mile within the entrance, and Punta Hoy projects from the S shore, about 0.8 mile W of Punta Wise. A shoal spot, with a depth of 11m, lies in mid-channel about 91m N of Punta Hoy.

Anchorage for vessels of moderate size may be obtained in the middle of the basin at the head of Puerto Angosto in a depth of 27m, with Punta Hoy, distant about 0.1 mile, in line with the S extremity of Isla Pasaje, bearing 078°. The bottom is rocky and uneven with clay, in which the anchor holds well.

Caleta Half Port is a small indentation 1 mile NW of Puerto Angosto.

Estero Canoa, close NW of Caleta Half Port, is very deep for a distance of 1.5 miles WSW to an island that nearly blocks the passage.

Punta Davis, N of Estero Canoa, has a conical-shaped mossy hill, 38m high at its extremity. A rock awash, and surrounded by kelp, lies about 183m NE of the point.

Estero Indio extends 2 miles W from Punta Davis. It is deep and of no value to navigation.

Caleta Byron lies between Estero Indio and Cabo Lunes. It is too confined for other than small vessels.

Cabo Monday (Cabo Lunes) (53°11'S., 73°24'W.), 282m high, has a flat summit which drops abruptly to the sea. It is the NW limit of Paso Largo on the S side of the strait.

Paso del Mar

8.67 Paso del Mar is the continuation of Estrecho de Magallanes from Paso Largo, and forms the W portion of the strait. From Cabo Monday, on the S shore, it extends 55 miles NW to Cabo Pilar. This portion of the strait lies between Isla

Desolacion on the S and the islands SW and W of Peninsula Munoz Gamero on the mainland. On the N shore it opens into Canal Smyth and then by other channels into Golfo de Penas.

In a heavy gale or strong breeze a short sea may be experienced in the wider part of the strait, especially W of Cabo Froward, but on reaching Paso del Mar, a heavy swell will be met coming from the Pacific.

This will be found to a certain extent even on the calmest days, and with strong W winds it becomes a serious drawback, giving a good indication of what may be expected outside.

Isla Blaxland (53°09'S., 72°20'W.), a small rocky island 30m high, partly covered with moss, lies 0.75 mile NW of Punta Havannah. A 7.2m patch, marked by kelp, lies about 183m E of the island.

Grupo Santa Ana, consisting of five small islands, lies 1.5 miles N of Punta Havannah in the entrance to Golfo Xaultegua. The group will be discussed with Golfo Xaultegua in paragraph 8.97. Pillolco, the farthest W of the group, lies 2.25 miles N of Punta Havannah.

Peninsula Munoz Gamero forms the N shore of Paso del Mar. It presents a succession of high, jagged peaks over 1,585m high, with deep ravines and precipitous cliffs. There are several inlets, but all are too deep and narrow to be of any service.

Bahia Clift, Bahia Thomas, and Bahia Corkscrew lie 5, 6.5, and 7.5 miles, respectively, NNW of Punta Havannah.

All three bays are narrow and too deep to be used as anchorages. There is a large glacier at the head of Bahia Clift.

8.68 Isla Richardson (53°03'S., 73°27'W.) lies close off the mainland, 8 miles NNW of Punta Havannah. The island is mostly low, but has two hills. The S hill is 99m high and appears conical from E.

The N hill, 100m high, has a square flat summit. Islets and rocks, marked by kelp, extend up to 1 mile SE, S, and SW of the island.

Canal Cripples is the passage between Isla Richardson and the mainland. It has a least width of 137m and is deep and clear of dangers in the fairway. Punta Cummins on the N side of the NW entrance is steep-to.

Islotes Maze lie in the entrance to Seno Northbrook, 1.5 to 2.75 miles NW of Isla Richardson. A conical hill rises to a height of 67m on the S island.

The remaining islets of the group are low, especially those in the NW which terminate in Punta Brown. A below-water rock lies about 0.2 mile N of Punta Brown.

Banco Providencia (53°01'S., 73°33'W.) is a rocky shoal with a depth of less than 2m at its S end, and lies 1.5 miles SW of Punta Brown.

To pass S of Banco Providencia, Pico Jones on **Isla Tamar** (52°54'S., 73°49'W.) must be kept bearing 312° or more.

To pass E of Banco Providencia, keep Punta Brown in range with **Cerro York** (52°58'S., 73°30'W.) on Isla Providencia, bearing 017° until Cabo Providencia bears 292°, when course can be altered to clear Punta Brown.

8.69 The inshore passage is recommended for vessels of up to 1,000 grt who wish to avoid the heavy seas that may be experienced in Paso del Mar.

This passage, N of Canal Cripples, passes between **Isla Pike** (53°00'S., 73°29'W.), 0.5 mile NE of Islotes Maze, and Isla Vince, 0.5 mile farther NE.

There is a rock about 73m off the W extremity of Isla Vince, otherwise the passage, about 0.4 mile wide, is deep and clear.

Seno Northbrook, a deep fjord entered N of Isla Vince, extends 10 miles ENE and end in a basin. It has not been surveyed and no anchorage has been found.

Canal Sylvia, a continuation of the inshore route, is the passage between Isla Providencia and Isla Emiliano Figueroa.

The fairway is deep throughout, and is about 0.1 mile wide at the narrows.

The E entrance is partly blocked by Islotes Pasaje. There is a deep channel N of them. Isla Entrada, located close NE of the highest islet, is the E islet of Islotes Pasaje; it is steep-to.

Roca Coombes (52°57'S., 73°30'W.), a small rounded knob of granite, 0.6m high, located on the S shore 1.5 miles NW of Isla Entrada, lies 137m offshore and is surrounded by kelp and shoal water extending 137m N. A mid-channel course will clear these dangers.

Punta Poulter, close NW of Roca Coombes, and Punta Hayes, on the N shore, are the W entrance points to Canal Sylvia. A 3.5m shoal, marked by kelp, lies off the W entrance to the channel, 0.3 mile NW of Punta Hayes.

Pico Channel, 3.5 miles NW of Punta Hayes, is a conspicuous peak, 469m high. There is another mountain, 679m high, similar in shape, 1.75 miles NE.

Isla Ward (52°56'S., 73°34'W.), 0.5 mile NW of the N extremity of Isla Providencia, is 18m high and is covered with moss and stunted trees.

A group of rocks lie close NW of Isla Ward, and islets extend SE of the island to Isla Providencia.

Roca Sullens (52°56'S., 73°35'W.), located 0.4 mile W of Isla Ward, is awash. It is marked by kelp and is an impediment to the free navigation of Canal Sylvia.

Roca Steed, with a depth of 2.4m, lies just over 1 mile SSW of Roca Sullens.

Anchorage may be taken in Canal Sylvia in a depth of 27m, gravel, mud, and stones, with Roca Coombes bearing 156°, distant about 0.2 mile. If the weather is clear, Pico Channel should be seen a little open of Punta Poulter. A waterfall, on the SW shore, bears 216° from the anchorage.

The track for vessels in transit of Canal Cripple and Canal Sylvia may be seen on the chart. After a vessel has rounded Isla Ward and the rocks off it, a vessel can pass either E or W of Rocas Sullens and Steed, but it is advisable to keep E, especially in thick weather.

In Canal Sylvia, the current usually runs strongly to the SE, but in calm weather the tidal current asserts itself and sometimes runs NW. The turning of the current does not coincide with the time of HW, and it is much affected by winds blowing in the main strait.

8.70 Isla Providencia (52°58'S., 73°32'W.) lies with its S extremity 4.25 miles WNW of Isla Richardson. It extends 4.25 miles NE and is separated from Isla Emiliano Figueroa by Canal Sylvia. The island is mountainous, and when seen from the strait, appears as an undulating ridge with several peaks. Cerro York rises to 304m in the E part of the island.

Cabo Providencia, the S extremity of the island, is a bold headland which is steep-to on its E side.

Punta Byron (52°56'S., 73°44'W.), 7.5 miles NW of Cabo Providencia, is the E entrance point of Puerto Tamar.

Arrecife Percival, with a depth of 3.4m, lies 0.75 mile SE of Punta Bryon.

Isla Dolphin, 0.3 mile S of Punta Bryon, is a bare rock 6m high. Islas Mouat lie 0.45 mile W of Isla Dolphin and extend W about 0.5 mile to within 183m of shore near Cabo Tamar.

Roca Sunk, which has a depth of 4m, is located 110m S of the E islet of the group.

A shoal, with a depth of 4m and marked by kelp, lies about mid-way between Islas Mouat and Punta Bryon.

Cabo Tamar (52°56'S., 73°47'W.) is the W entrance point of Puerto Tamar. A hill close N of the cape is 155m high, and a rounded hill, 256m high, rises 0.5 mile NW of the cape.

Isla Sentry, 3m high, lies about 0.1 mile S of Cabo Tamar. Shoal depths, marked by kelp, extend about 0.1 mile SW of the island.

Puerto Tamar (52°56'S., 73°46'W.) is entered between Punta Byron and Cabo Tamar, 0.9 mile WSW. It is backed by Alturas Beloe, a range of hills with several hummocks that have a highest elevation of 225m.

A prominent white mark, like a tombstone, is located 0.3 of the way up the side of the hill, 0.4 mile N of Cabo Tamar.

Islas Spencer are two small islands in the middle of the bay, 0.2 mile N of the highest of Islas Mouat.

It is not recommended to use Puerto Tamar as an anchorage if it is at all possible to reach a more sheltered anchorage. The best anchorage is about 0.2 mile E of Islas Spencer in a depth of 27m, rocky, uneven bottom with stiff clay in the hollows between the rocks.

The approach to Puerto Tamar should be made with the E islet of Islas Mouat in line with the white mark bearing 310°.

When the left hand tangent of the point, about 0.1 mile NW of Punta Bryon, bears 010°, course should be altered to maintain this bearing which leads W of Isla Dolphin and E of the 4m shoal which is clearly marked by kelp. After passing this shoal, the vessel can steer for the anchorage.

The E flood current may attain a rate of 1.5 knots. The ebb current is not so strong, but, when running to windward, causes overfalls and tide rips S of Cabo Tamar. In the entrance to Puerto Tamar, the currents run at rates from 1 to 2 knots, with varying direction, according to the wind.

8.71 Paso Roda is entered W of **Cabo Roda** (52°56'S., 73°49'W.), about 1 mile W of Cabo Tamar. The pass separates Isla Emiliano Figueroa from Isla Tamar and extends 3.25 miles NNE to Punta Grup on the E shore. The channel is used by small vessels bound N for Canal Smyth.

Isla Tamar lies 0.8 mile N of Cabo Roda. It rises to two peaks. Pico Taylor, the S peak, is 421m high, square, and flat-topped. Pico Jones, 0.5 mile NNW, is 428m high and has a sharp summit.

Rocks and islets skirt the shores of Isla Tamar for 1.25 miles to the SW and 0.5 mile W. Isla Falgate, the highest, is marked by a light on its E side and is 18m above-water.

An anchorage has been tested by Chilean authorities, bearing 079°, 1,040m from Isla Falgate lighthouse.

Roca Astree (52°56'S., 73°51'W.), the outermost danger SSW of Isla Tamar, has a depth of 4.5m, marked by kelp. It lies 0.7 mile SW of Isla Falgate.

A patch of kelp lies 2 miles W of the W extremity of Isla Tamar.

Islotes Direccion consist of two islets that lie 0.1 and 0.4 mile E of Isla Falgate, and two above-water rocks lying 0.5 mile NW of Cabo Roda. A beacon stands on the E of the two rocks.

Roca Estribor and Roca Babor lie about 0.4 mile N and 0.5 mile NNW, respectively, of Cabo Roda.

There are two narrows in Paso Roda. The first narrow, 1.3 miles N of Cabo Roda, is about 0.1 mile wide with a least depth of 11m. At the N entrance, close W of **Punta Grup** (52°53'S., 73°46'W.), the channel is about 0.1 mile wide between the dangers with a least depth of 10.1m.

Islotes Carabantes are located in the entrance to Bahia Sargaza, 2.3 miles NNE of Cabo Roda.

Roca Carabantes, awash, lies on the E side of the fairway, about 0.6 mile SSW of Punta Grup, and a rock, awash, lies on the W side of the fairway 0.4 mile WSW of Roca Carabantes.

A rock, awash, lies about 0.1 mile SW of Punta Grup, and a group of islets lie between this rock and the point.

A chain of islets and rocks lie about 0.2 mile W of Punta Grup and extend 0.7 mile SW to the NE extremity of Isla Tamar. A beacon is situated on the NE rock in this group.

Outside Paso Roda, a rock, awash, lies about 0.3 mile NNW, and there are breakers about 0.3 mile WNW of Punta Grup.

Directions.—A vessel approaching Paso Roda from the S should pass 0.4 mile WSW of Cabo Roda, steering to pass 0.15 mile E of the beacon on Islotes Direccion and between Rocas Babor and Estribor.

A mid-channel course should be steered through S narrows, and when clear, a vessel should steer for the beacon 0.2 mile W of Punta Grup until clear of Roca Carabantes.

Then steer to pass midway between the rock, awash, that lies about 0.1 mile SW of Punta Grup and the beacon.

Caution.—There are numerous tide rips in the vicinity of the S entrance.

8.72 From Cabo Monday (53°11'S., 73°24'W.), the coast trends in a NW direction about 9 miles to Cabo Upright then WNW 11.5 miles to the entrance to Puerto Churruca.

This coast is indented by numerous bays and sounds which are relatively deep, but afford few anchorages.

Caleta Medal is a small indentation about 0.1 mile in diameter, 1 mile NW of Cabo Lunes. Its entrance is encumbered by a small islet.

Isla Cordova (53°08'S., 73°30'W.), 4 miles NW of Cabo Lunes, rises to a height of 217m in its S part. Monte Conway, on the N of the island, is a remarkable hillock. Cerro del Castillo rises to a height of 162m, 0.5 mile farther W.

Caleta Luis is a two-armed bight located on the N shore of Isla Cordova. Monte Conway forms its W entrance point.

Paso Cordova, between Isla Cordova and the coast SE, is 0.5 mile wide at the entrance and narrows to 0.25 mile at its S end.

A small islet lies E of mid-channel and some rocks lie near the E shore at the narrowest part. Kelp lies off the S point of Isla Cordova, but there is 11m in mid-channel.

Estero Cordova is entered NW of Isla Cordova and extends 10 miles S. The inlet divides into several small arms, but it is deep and affords no good anchorages. It has not been examined S of Bahia Williaw, which lies 4.5 miles within the entrance on the W side.

Bahia Upright is entered W of Estero Cordova. It should be avoided. The bottom is rocky and uneven. There are several below-water rocks marked by kelp in the entrance.

8.73 Cabo Upright (53°05'S., 73°36'W.), a flat-topped, square-faced headland 268m high, is the termination of a promontory which separates Estero Cordova from Seno Wallis. Several islets and rocks lie close off the cape.

Isla Centinela, 16m high, is small and rocky; it lies about 0.3 mile E of Cabo Upright. Foul ground extends 0.25 mile from the islet. A light, shown from a round concrete tower, 6m high, is situated on the summit of the islet.

Bahia Ildefonso is an indentation on the N face of the promontory, W of Cabo Upright. A line of rocks runs out from its center terminating in **Roca Midge** (53°05'S., 73°37'W.), about 0.3 mile outside the W entrance point of the bay.

Islotes Coughtry lie 1 mile W of Roca Midge. The islets, which have rocks awash, off their N sides, are mostly low, but the largest islet rises in a rounded hill to an elevation of 50m.

Seno Wallis is entered W of Islotes Coughtry and has not been properly examined. It extends 6.5 miles S and has two bays on its W side, close to the entrance; these bays have rocky bottoms and are too deep for anchoring.

Bahia Alquilqua is entered E of Punta Santa Casilda. Caleta Uriarte lies in the SW part.

Islas Chapman front Caleta Uriarte and lies from 1.25 to 2.75 miles E of Punta Santa Casilda.

Outside, in the strait off Islas Chapman, as well as off Islotes Coughtry, the tidal currents and wind raise a heavy sea with fierce tide-rips. This, combined with the fact that the wind generally blows in towards the shore, unless from the SW, makes it an undesirable locality which should be avoided.

Punta Santa Casilda (53°03'S., 73°48'W.) is the NE extremity of a peninsula which separates Bahia Alquilqua from Estero Puchachailgua. It is low, but is immediately backed by a steep mountain, 411m high.

Estero Puchachailgua is entered close W of Punta Santa Casilda. It is a long narrow inlet, which extends 4.25 miles SSE. Two islets almost fill the entrance.

Punta Echenique, the W entrance point to Estero Puchachailgua, is backed by precipitous mountains.

Caleta Santa Monica, a small bay with a narrow entrance, lies 0.75 mile WNW of Punta Echenique.

8.74 Puerto Churruca (53°02'S., 73°56'W.) is entered between Punta Buti, 2 miles WNW of Punta Echenique, and Isla Diaz, 1.25 mile W of Punta Buti.

The port is small and is only appropriate for small vessels up to 130m long with local knowledge.

There are some notable mountains in the vicinity of the inlet which are bare, slate-colored, with precipitous sides.

Monte Cunningham, 750m high, is located on the E side, 1 mile SSE of Punta Buti. It is sharp and prominent when seen from E or N.

A peak, 765m high, is located 1.25 miles SE of Monte Cunningham.

Monte Campbell, a sharp peak 775m high, is located near the head of the inlet, 2.5 miles SW of Punta Buti.

Monte Hart-Dyke, the highest summit in the vicinity, rises to an elevation of 1,373m, 2.5 miles WNW of Monte Campbell. It is covered with a sheet of ice, and in clear weather one of its glaciers can be seen from the strait, high up over one of the W arms of Puerto Churruca. All these peaks are almost continually enveloped by clouds.

8.75 Between Isla Tamar and **Cabo Phillip** (52°45'S., 73°55'W.), the S extremity of Isla Manuel Rodrigues, 8.5 miles NNW, are the approaches to Bahia Beaufort and Canal Smyth.

Bahia Beaufort lies between Isla Tamar and Peninsula Merino, 6.5 miles NE. It recedes more than 25 miles NE, and is divided into Seno Glacier and Seno Icy. The bay is full of hidden dangers, and should not be used even by light-draft vessels.

Cabo Phillip is the W entrance point to Canal Smyth.

Isla Parker (52°42'S., 74°10'W.), 8.5 miles NW of Cabo Phillip, attains an elevation of 320m near its NE side.

Bahia Parker, entered between Cabo Phillip and Isla Parker, has numerous rocks and islets marked by kelp. Several inlets and channels lead off the bay.

Bahia Lecky, a small bay on the SE side of Isla Parker, is entered between **Punta Woolcott** (52°43'S., 74°10'W.), the S extremity of the island, and a point 1 mile NE.

An above-water rock lies 0.4 mile ESE of Punta Woolcott, and a large patch of kelp extends 1 mile ESE.

Cabo Parker is the SW extremity of Isla Parker. An island surrounded by shoal water lies about 0.2 mile SW of the cape.

A rock awash, which generally breaks, lies 3.5 miles WNW of the cape.

Isla Westminster (52°38'S., 74°23'W.), a precipitous mass of granite 342m high, lies at the S end of a group of islets, 8.75 miles NW from Cabo Parker. This islet has a remarkable appearance when viewed from any direction.

Grupo Narborough extends about 10 miles NNW of Isla Westminster. They are a chain of two large islands and a number of small islets and rocks. The coasts of this group, and the coasts of those that run as far as Cabo Victoria, 18 miles NW, are dangerous due to the large number of rocks over which the sea always breaks and the currents which generally set over the edges of the line of shoals.

Rocas Buena Esperanza lie 5 miles S, 8 miles SW and 8 miles NW of the principal island of Grupo Narborough.

This area should be avoided. Not only are there numerous rocks, on which the sea breaks heavily, but also the tidal currents set toward them near the edges of the shoals.

8.76 Isla King (52°22'S., 74°40'W.), located 18 miles NNW of Isla Westminster, rises to a height of 710m. It is the highest land in this area. A group of islets, rocks, and shoals lie up to 2 miles W of Cabo King, the SW extremity of the island, and are separated from the island by Paso King.

Grupo Cuarenta Dias, located about 2.5 to 5.7 miles NW of Cabo King, consists of two principal islands and several islets and rocks.

Roca Ballenato (52°24'S., 74°49'W.), which dries, lies 4.5 miles W of Cabo King. Another rock, awash, lies 3.75 miles W of Roca Ballenato, and Rocas Duble, two rocks awash, 0.45 mile apart, lie 1 mile farther WNW. A shoal, with a depth of 9m, is reported to lie 2.25 miles SW of Roca Tortuga.

Puerto Cuarenta Dias lies on the E side of an island, in a group of islands by that name, 4.5 miles NW of Cabo King. It is frequently visited by the vessel which carries supplies to Grupo Evangelistas lighthouse.

Cabo Victoria (52°17'S., 74°56'W.), the N point of the W entrance to Estrecho de Magallanes, is a small, cliffy islet 100m high, close off the W end of Isla Victoria, 11 miles NNW of Cabo King. Isla Victoria is rugged, precipitous, and rises to 375m; it is surrounded by rocks.

Grupo Evangelistas (52°23'S., 75°06'W.), consisting of four rugged, rocky islets and some detached rocks, above and below-water, lie 9.5 miles SW of Cabo Victoria. The W islet, which is the largest of the group, rises to a height of 60m.

A reef, with two rocks which dry, lie 1 mile E of the W rock; the reef extends about 1 mile SSE from this position.

The W islet may be seen from a distance of 15 miles in fairly clear weather. A light is shown from a white circular tower, 11m high, with a dwelling alongside, situated on the summit of the W islet; a racon is located at the light.

Tidal currents in the vicinity of Grupo Evangelistas are variable, and sometimes set toward the SW rocks of Grupo Narborough and Grupo Cuarenta Dias.

8.77 The S side of the strait continues in a NW direction from Puerto Churruca to Cabo Pilar, a distance of about 33 miles, and is formed by Isla Desolacion. This coast is indented by several bays and coves, with few satisfactory anchorages.

Caleta Darby (53°01'S., 73°56'W.) is entered about 0.7 mile W of Puerto Churruca. It appears to have a rocky bottom as there are large quantities of kelp.

Between Caleta Darby and Bahia Wodsworth, 3 miles WNW, there is a succession of small bays between low rocky points; none of the bays afford shelter to large vessels.

Bajo Magallanes (52°57'S., 73°55'W.) is a rocky bank with a least charted depth of 19.8m, located near mid-channel 3 miles N of Caleta Darby. The bank is steep-to and a heavy sea rises on it during strong W gales.

A shoal depth of 42m was reported to exist close to the recommended track about 8 miles NW of Bajo Magallanes.

8.78 Bahia Wodsworth (52°59'S., 74°02'W.) is entered between Punta Oeste and Punta Este, about 0.75 mile SE. It divides into 3 arms, and is generally deep and easy of access.

Bajo Carlos, with a depth of 7m and marked by kelp, lies near the middle of the N of the two W arms, 0.5 mile SSW of Punta Oeste.

Anchorage may be taken in the SE arm in a depth of 29m, mud, where the arm is about 0.2 mile wide. Particular care is required in NW winds which often gust at 70 knots.

The coast W of Bahia Wodsworth is fronted by islets and rocks for 2 miles. A rock lies on foul ground 0.5 mile offshore, 1 mile NNW of Punta Oeste.

A light is shown from a circular metal tower 14m high, situated on the E islet of a group, about 2 miles NW of Punta Oeste.

Bahia Felix is entered about 1 mile W of the light. It has a rocky bottom with much kelp, and is exposed to the prevailing winds. It is unsuitable as an anchorage.

Punta Felix (52°57'S., 74°08'W.), the NW entrance point of Bahia Felix, forms a peninsula. The point is prominent and appears as a ridge with two peaks on it. The N peak is 192m high, and the S peak is 359m high. Rocks and foul ground extend 0.2 mile from the coast.

On the SW side of Punta Felix there is an extensive, unsurveyed bay.

The coast between Punta Felix and Cabo Valentine, 6 miles WNW, has not been surveyed and should be given a wide berth.

Bahia Valentine lies between Cabo Valentine and a small islet 0.5 mile S. It has a narrow entrance between the rocks.

Cabo Cuevas (52°52'S., 74°21'W.) lies 3 miles NW of Cabo Valentine. It is 137m high. Bahia Trujillo, about 2.7 miles W of Cabo Cuevas, is sheltered but has deep water rather near the shore.

Bahia Tuesday (52°50'S., 74°28'W.) is entered close S of Cabo Cortado, about 3 miles NW of Cabo Cuevas.

There is passage on either side of Islas Nodales, a cluster surrounded by foul ground in the middle of the entrance, but the N one is 137m wide and is preferred.

Roca Quartermaster, on which the sea always breaks, lies close E of the N entrance point of Bahia Tuesday.

There are dangerous rocks charted 183m off the N shore, 0.75 mile W of Roca Quartermaster.

There is anchorage in Bahia Tuesday in a depth of 36 to 40m, with Punta Nose bearing 142°, distant 0.3 mile, or with Punta Nose bearing 052°, distant about 0.2 mile, in a depth of about 36m, mud and rock.

8.79 Cabo Cortado (52°51'S., 74°25'W.) is a perpendicular rock, 61m high. This cape is easily recognized by vessels in transit along the shore, and if a vessel is well out in the strait, it may be recognized by a needle mountain that rises over Bahia Tuesday.

From Cabo Cortado to Cabo Pilar, 12 miles to the NW, the coast is foul and dangerous.

Surgidero Skyring is located 4 miles NW of Cabo Cortado, and Roca Santiago lies 2.5 miles farther NW.

Roca Volpe (52°45'S., 74°34'W.), with a depth of less than 2m, lies 1.5 miles offshore 1.5 miles NNW of Roca Santiago. Depths of 27.4m lie 2.25 miles NNE and ENE of Roca Volpe.

Puerto Misericordia lies 1.25 miles S of Roca Volpe. This small bay is encumbered with rocks and patches of kelp, and should be avoided at all costs.

Cabo Pilar (52°44'S., 74°41'W.) is the S entrance point of the W entrance to Estrecho de Magallanes. It lies 4.5 miles NW of Puerto Misericordia and 25 miles SE of Grupo Evangelistas. The sides of the cape are sheer and it is backed by two mountains which form a high and remarkable promontory. Viewed from the E, the cape appears to have a double-peaked summit. The W peak is shaped like a tower and

rises to a height of 522m. The E peak, 1 mile SE of the cape, is 561m high.

In addition to the peaks inside the strait and on the coast, two other peaks are seen. The S one is the highest.

The high tableland SSW of Cabo Pilar slopes abruptly nearly to the sea and falls off to the S and W, forming a long spit. Two or three prominent detached rocks lie off this spit.

Lanchas Espanolas are several small, but steep islets close off Cabo Pilar. The largest, 93m high, is clearly seen as a prominent detached islet from E. Shoal water is reported to lie 2 miles NW of Cabo Pilar.

Caution.—It is recommended that Cabo Pilar be passed in daylight hours only.

Approach to Estrecho de Magallanes

8.80 When approaching from N, toward the W entrance of Estrecho de Magallanes, do not pass less than 9 miles W of **Isla Duque de York** (50°38'S., 75°20'W.), about 91 miles NNW of Grupo Evangelistas, and the same distance W of **Isla Diego de Almagro** (51°30'S., 75°10'W.), whose N extremity is about 27 miles SSE of Isla Duque de York.

If possible, Cabo Santa Lucia or Cabo Jorge, the W and S extremities of Isla Diego de Almagro, respectively, should be sighted.

Then steer to pass at least 9 miles W of Grupo Evangelistas, to ensure safely passing Roca Galicia, and the shoal depths of 24, 25, and 32m charted 16 miles NW, 7 miles WNW, and 5 miles W, respectively, of Grupo Evangelistas.

A course of 151°, passing 10 miles W of Grupo Evangelistas, leads W of the 100m contour. In bad weather, the swell causes a rough sea inside the 100m contour.

After rounding Grupo Evangelistas, steer to pass 4 miles NNE of Cabo Pilar, then steer as required to maintain the recommended charted track.

The current in the vicinity of Grupo Evangelistas runs between SE and ESE into the straits, but a portion deviates S and W of Cabo Pilar to run along the W side of Isla Desolacion. Care should be taken to make good the course set between Grupo Evangelistas and Cabo Pilar. Usually a vessel is set S and E of her assumed position.

Passages North of Estrecho de Magallanes

8.81 Isla Riesco extends 70 miles ENE from Estrecho de Magallanes and is 30 miles wide. Peninsula Cordova, its SW part, forms the shores of Paso Tortuoso and Paso Largo. The island is separated from Peninsula Brunswick to the SE by Seno de Otway, which is approached through Canal Jeronimo.

Canal Fitzroy connects the N end of Seno de Otway with the E end of Seno Skyring. Seno Skyring lies N of Isla Riesco, and is joined to the strait by Canal Gajardo and Golfo Xaultegua, which lie W and SW, respectively, of Isla Riesco.

Canal Jeronimo

8.82 Canal Jeronimo leads from the W end of Paso Ingles, between **Punta Arauz** (53°32'S., 72°21'W.) and Punta San Jeronimo 1.25 miles W, to a position 9 miles NNW, then extends 12 miles NNE where it joins Seno de Otway.

In the S half, Canal Jeronimo has an average width of 0.75 mile, but NE of Fiordo Condor it gradually widens, and in this part of its course are several small islands with clear shores.

Tides—Currents.—The tides are regular in Canal Jeronimo, and have a range of 1.4m. In the S end of the channel, the flood current sometimes reaches a velocity of 8 knots, and the ebb 6 knots; but these velocities decrease rapidly towards the N. Slack water is of short duration, not exceeding 20 minutes at HW and 10 minutes at LW.

Vessels should guard against being set off their course by the strong tidal current when in this channel.

Vessels are required to maintain a listening watch on VHF channel 16 from 1 hour before their ETA of Islotes Teran.

During this period, ETA should be broadcast every 10 minutes.

Punta San Carlos (53°30'S., 72°24'W.) is about 2 miles NW of Punta Arauz and is cliffy. A light is shown from a position about 0.2 mile WNW of the point.

8.83 Caleta Real (53°26'S., 72°27'W.), on the E shore about 5.2 miles NNW of Punta San Carlos, is entered N of Punta San Miguel. Anchorage may be obtained in depths of 18 to 22m, sand, with good holding ground, but exposed to W winds.

When entering Caleta Real do not pass more than 0.3 mile off Punta San Miguel, in order to clear the dangers extending SSE from Islotes Teran.

Islotes Teran (53°25'S., 72°29'W.) are two islets 9m high, located in mid-channel 1.5 miles NNW of Punta San Miguel.

A bank marked by kelp extends 0.9 mile SSE of the S islet and a 7.9m patch lies about 0.2 mile farther SSE.

A similar bank extends 0.75 mile NNW from the N islet. Vessels should pass W of these islets. A light is shown from the N islet.

Cabo Viejo (53°24'S., 72°29'W.) lies 0.5 miles N of Islotes Teran, on the E side of the canal. Here the channel leads to the NE.

Estero Condor is entered between Cabo Forty-Five, which is high and steep-to, 2 miles W of Cabo Viejo, and Punta Condor, which is 2.25 miles NNE and marked by a light. The cove extends 6 miles WNW and has a least width of 0.4 mile.

It is clear of charted dangers except for Bajo Yavar, a shoal with less than 2m, near its head.

Strong squalls descend from the heights which border the shores. There are heavy tide-rips and overfalls 1 mile within the entrance of Fiordo Condor.

Puerto Henry (53°25'S., 72°37'W.), entered W of Punta El Morro, 1 mile WNW of Cabo Forty-Five, affords anchorage in a depth of 33 to 36m, sand and shells, with good holding ground, about 0.3 mile SSW of Punta Piedras, which is a small promontory projecting well out from the W shore 1.5 miles SSW of Punta El Morro.

Puerto Condor (53°21'S., 72°39'W.), at the head of Fiordo Condor, affords anchorage in 27m, sand and mud, midway between Isla Dagnimo and the shore 0.25 mile NE.

Vessels approaching the anchorage should pass between Bajo Yavar and Isla Dagnimo and pass W of the island.

8.84 Islas Cutter (53°22'S., 72°29'W.), on the E side of Canal Jeronimo, are two islets 1.5 miles N of Cabo Viejo. The

W islet, very small and grassy, is 7m high. Midway between it and the shore is a larger islet which is 30m high.

Puerto Cutter, 1 mile E of Islas Cutter, affords good anchorage in depths of 14 to 18m, mud and shell, in the N part of the harbor; strong squalls sweep across the harbor.

Between Puerto Cutter and Cabo Charles, 8 miles NE, the mountains are high and rugged. Monte Condor, 997m, Monte McIntosh, 994m and Monte Muela, 1,189m lie, respectively, 3 miles NE, 6.75 miles NE, and 8.5 miles E, of Puerto Cutter.

Islotes Tree (53°18'S., 72°24'W.) are two islets close off the E shore that lie 2 miles NE of **Punta Limit** (53°19'S., 72°26'W.), a low and fairly prominent point. Rocks and kelp extend 183m W from the islets.

Isla Guzman (53°20'S., 72°30'W.) rises to a height of 480m on the W side of Canal Jeronimo, 3.25 miles NNW of Cabo Viejo. On the NE side of the island there is a conspicuous black patch with parallel sides and dome-shaped top. This landmark can be seen from a considerable distance to the NE.

Cabo One, which ends in an outcrop of rocks, lies 4.5 miles NE of Isla Guzman. Fiordo Sullivan is entered N of Cabo One, but affords no anchorage.

Islas Corona, a group of three islands, lie off the entrance of Fiordo Sullivan. Isla Pan de Azucar, lies 2 miles E of Cabo One. It is 84m high, conical in shape, wooded, and marked by a light. Isla Corona, also marked by light, is saddle-shaped and is 99m high. It lies close off the N shore and is very hard to distinguish from the S.

Isla Ward, 16m high, is the W island and lies 1.25 miles ENE of Cabo One.

8.85 Cabo Charles (53°16'S., 72°17'W.) lies on the E side of Canal Jeronimo at the entrance to Seno de Otway. The cape can be identified by three sharp summits in line, decreasing in elevation progressively towards the channel.

At the foot of these heights, there is a hillock covered with reddish-yellow moss, which shows as a patch amongst the vegetation in the vicinity.

Punta Manning (53°14'S., 72°18'W.), 4 miles ENE of Cabo One, slopes gradually to the sea, with two small islets close N of it. This point, with Cabo Charles 1.5 miles SSE, marks the NE end of Canal Jeronimo.

Directions.—Vessels entering Canal Jeronimo should keep nearer the W shore to avoid the rocks extending from Punta Arauz. After passing this point, steer in mid-channel until 2 miles SSE of Islotes Teran, then keep close to the W shore until these islets and banks have been passed.

When abreast Cabo Forty-Five steer for Cabo One, and when nearing it, steer to pass between Isla Pan de Azucar and Isla Corona. A mid-channel course should be steered from here into Seno de Otway.

Seno de Otway

8.86 Seno de Otway extends 49 miles NE from its entrance between Cabo Charles and Punta Manning. It opens out to a width of 16 miles. There are charted depths of 602m in the W part of the sound, but the depths gradually lessen toward the NE end.

The SW part of the sound is surrounded by high steep hills, covered with dense forest, with steep shores and small beaches

here and there. In the E part, the hills decrease gradually in height. The shores are low and fronted by beaches which afford landing in fine weather. The tidal currents are imperceptible in the open part of the sound.

The NW shore rises gradually to a range of many hills. There is a dense forest between **Punta Manning** (53°14'S., 72°18'W.) and Punta Grimal, 33 miles NE.

Estero Bending is entered close E of Punta Manning, and Punta Islote is located 4 miles NE of the point.

Punta Islote is low and rocky, with a small promontory at its end. Rocks and kelp extend 0.5 mile off the point which should be given a berth of at least 1 mile.

8.87 Punta Solitaria (53°12'S., 72°11'W.) is located 0.5 mile NE of Punta Islote. Estuario Fanny is entered between Punta Solitaria and Punta Villiers, 6 miles NE. The bay divides into 2 arms, 3.5 miles within the entrance which extend 6.5 miles NW and 13.5 miles WNW. It is surrounded by high mountains rising to a height of 1,240m on the N, and 1,019m on the S side.

Between Punta Villiers and **Punta Martin** (53°06'S., 71°58'W.), 4 miles NE, several islets and detached rocks lie close offshore.

Caleta Toro, a small cove surrounded by comparatively low wooded hills, is entered 1 mile SW of Punta Martin.

Monte Toro, 994m high, and Monte Hamond, 509m high, lie 5.5 miles NW and 3 miles W, respectively, of Punta Martin.

There is an anchorage in Caleta Toro near the head of the cove, in a depth of 14m, sand and shells, abreast the extremity of a prominent cliff on the S shore.

Caleta Eros is located close N of Islotes Eros, which lie 1.75 miles NNE of Punta Martin. There is a shoal in the center of the cove, with a least depth of 2m, marked by kelp. There is an anchorage SW of this shoal near the W shore in a depth of 20m, with good holding ground.

Isla Englefield and Isla Vivian, 106m and 123m high, respectively, are two flat-topped, wooded islands lying close together, 4 miles E of Punta Martin. A light is shown from the SE extremity of Isla Vivian. Isla Diaz, 20m high, is located 1 mile E of the passage between these two islands. The passage is not navigable.

A bank, with a least depth of 18m, lies 1.5 miles SE of Isla Vivian Light. Vessels bound for Pecket Mine Terminal should pass S of Isla Vivian.

Puerto Ward, off the E side of Isla Vivian, affords a temporary anchorage in a depth of 30m, sand and shells, 137m offshore.

A bank, with a least depth of 18m, extends 1.5 miles SE from the S extremity of Isla Vivian.

Punta Sunshine (53°02'S., 71°55'W.), 4.75 miles NNE of Punta Martin, is low, sandy, and covered with vegetation. The water around the point is deep and clear of dangers.

Caleta Alonso lies N of Punta Sunshine. There is a jetty where a vessel with a draft up to 3.7m may moor.

Anchorage may be obtained 91m off the jetty in a depth of 23m. A course of 270°, with the jetty ahead, leads clear of dangers to the anchorage.

Punta Grimal (52°54'S., 71°35'W.), 15 miles NE of Punta Sunshine, is a low distinctive point with a clump of trees.

At this point, the dense forest which covers the NW shore of Seno de Otway begins to diminish, and farther E it is only seen in patches.

Ensenada del Indio lies close W of Punta Grimal. A rocky ridge extends 0.2 mile SW of the point, and 0.5 mile SW a reef extends NW to the coast.

Anchorage for vessels of moderate size, with local knowledge, may be obtained between the ridge and the reef.

Punta Hall (52°50'S., 71°25'W.) is the W entrance to Canal Fitz Roy. It lies 6.75 miles ENE of Punta Grimal.

8.88 Caleta Ocasión (53°16'S., 72°15'W.) is entered 1.75 miles E of Cabo Charles. Anchorage may be obtained, sheltered from SW winds, 0.3 mile from the head of the cove in depths of to 25m, sand and shells.

Puerto Pomar (53°16'S., 72°09'W.), 3 miles E of Caleta Ocasión, affords good anchorage in a depth of 28m, mud and shells. When making this port, vessels should give Punta Luis, the W entrance point, a berth of at least 0.5 mile, pass 0.2 to 0.3 mile E of Isla Roa and then steer to the anchorage about 0.45 mile S of Punta Luis.

Fiordo Wickham is entered E of Cabo Stokes which lies 1.25 miles E of Isla Roa. The inlet trends S and SW for 16 miles. The N part is deep and clear of dangers in the fairway, but the S part contains many islets and rocks and requires careful navigation.

There are two anchorages with one where the inlet bends SW, in 14.6m, mud, and the other at the head of the inlet in 9m. These anchorages are for vessels with local knowledge.

Cabo Flinn (53°14'S., 71°51'W.) is located 7.5 miles E of Fiordo Wickham. It is the W entrance point of Fiordo Silva Palma. Punta Entrada, 4.5 miles farther E, is the E entrance point of the inlet which extends S and SW for 29 miles.

There is an anchorage near the E shore, 8 miles within the entrance in a depth of 20m, mud, and another near the W shore, 3 miles farther in, in a depth of 4.6m.

East of the latter anchorage is a shoal extending from the E shore to mid-channel.

8.89 Cabo Camden (53°12'S., 71°40'W.), 2.5 miles E of Punta Entrada, is the W entrance point of Caleta Camden. Caleta Camden is open, but affords good anchorage in a depth of 12m, mud, near the E shore.

From Caleta Camden, the coast trends NE 27 miles to **Punta Espolon** (52°49'S., 71°12'W.) at the head of the bay.

Arrecife Las Piedras, 9 miles SSE of Punta Espolon, lies up to 1 mile offshore. A reef, marked by kelp, extends 2.75 miles NE from Arrecife Las Piedras.

Pecket Marine Terminal (52°57'S., 71°12'W.) consisting of a conveyor belt leading to a lewying ship-loader, is situated 1.5 miles NE of Arrecife Las Piedras and about 0.5 mile offshore. It serves a nearby coal mine.

The pier is 1,800m in length, oriented toward the WNW, supported by steel piles and with 4 dolphins.

The mooring should then be approached on a heading of 212°. Two floating lighted beacons mark this course, and an inflatable rubber float marks the anchorage point for the starboard anchor. Casting off should be started with a slight flood current.

Medium and strong winds from the SW and NW should be taken into account, as these create a choppy and persistent swell. It has also been determined that the ebb current pushes vessels against the pier.

Ensenada Torino (52°49'S., 71°16'W.), midway between Punta Espolon and Punta Jorge, the E entrance point of Canal Fitz Roy, 5 miles W, affords anchorage 1 mile offshore in a depth of 14.9m, sand and shells. The bay is open S and SW, and is foul with rocks and kelp.

8.90 Canal Fitz Roy extends NNW from Seno de Otway to Seno Skyring, a distance of 13 miles. This channel separates Isla Riesco from the mainland to the E. There are least navigable depths of 7.6 to 9.1m in the S entrance.

The fairway, through the wider parts of the channel, is restricted by banks which extend from both shores, sometimes to mid-channel, making navigation difficult. This problem is increased by the tidal currents which run through the channel at an average rate of 4 knots.

In the entrance, when wind and tide oppose each other, strong tide-rips and a short high sea may be met.

Slack water, which is considered the best time to pass through, occurs two hours after the time of HW or LW at Puerto Curtze.

The E shore is about 12m high and sloping. The W is low with the exception of Punta Fenton, 5.2 miles N of Punta Hall.

Punta Hall (52°50'S., 71°25'W.), the W entrance point, is a sandy spit with a conical white beacon 10m high.

Punta Jorge, the E entrance point, is low and not easily recognizable, but a beacon stands on the point.

Punta Titus (52°48'S., 71°23'W.), a steep-to sandy spit, lies 2.5 miles NNE of Punta Hall. A beacon stands on the point. A 4.6m shoal lies about 0.6 mile offshore 1.5 miles NE of Punta Hall. Between Punta Hall and Punta Titus, a bank of sand, shells, and stones, with a depth of 2.7m, extends 0.5 mile offshore.

Puerto Curtze, on the W side of the channel, W of Punta Titus, affords the best anchorage in Canal Fitz Roy. Anchor in 10m, mud, with the beacon on Punta Titus bearing 095°.

This anchorage is sheltered from W winds and is out of the tidal currents. A stranded wreck lies at the head of Puerto Curtze, about 0.5 mile SW of Punta Titus.

Punta Arnott, 1 mile NNW of Punta Titus, is a prominent sands pit which can be approached to within 183m. A beacon stands near the point.

Ensenada Kelway is located on the W coast 1.75 miles NNW of Punta Arnott and Punta Fenton, 23m high, is located on the W side, 0.8 mile farther NNE.

A cable, with a vertical clearance of 8.5m at HW water, spans the narrows 0.2 mile N of Punta Fenton.

8.91 Punta Rivera (52°48'S., 71°23'W.), located on the E side of the channel 0.75 mile NE of Punta Titus, is low and flat, with a small cliff S of it. Punta Reynard, a low stony point, lies 2 miles NNW of Punta Rivera.

Bajo Reynard, with depths of less than 3.2m, lies at the N end of a bank that extends between Punta Rivera and Punta Reynard, and up to 0.4 mile offshore.

Angostura Santa Cruz is the narrows that is entered between Punta Reynard and Punta Fenton, and extends 2 miles N to Punta Turn, on the E coast, and has a least width of 0.2 mile.

The fairway is clear of dangers, but kelp extends from either shore. The current attains a velocity of 5 knots, causing overfalls when it is running at its greatest strength.

Bahia Palomares, on the E side of the narrows, affords anchorage in 14m, sand and shells, but the tidal currents are strong.

Punta Turn (52°43'S., 71°24'W.) is fringed with kelp, but deep water can be found 91m offshore.

Punta Meric is located on the E shore, 1.5 miles NNW of Punta Turn; two yellow boulders lie close to the point.

There is a jetty located 183m E of the point, and anchorage may be taken off the jetty in a depth of 15m, sand and shells. There are some houses, one with a prominent red roof, close E of the jetty. Range beacons stand E of the point.

Quebra da Uribe is a ravine which stands on the W shore, 0.7 mile WNW of Punta Meric.

The channel is about 183m wide between the shore banks SW of Punta Meric.

Punta Canuto (52°41'S., 71°27'W.) is on the W shore, about 0.4 mile NNW of Quebrada Uribe. A detached shoal, with a depth of 4m, lies 0.2 mile NE of Punta Canuto.

Punta Stokes, 1.75 miles NNW of Punta Canuto, is backed by a hill, 94m high.

8.92 Punta Bennet (52°39'S., 71°28'W.), the W entrance point at the N end of Canal Fitz Roy, is low and there are some houses on it. A depth of 5.3m is charted 0.2 mile NW of the point.

On the E side of the channel between Punta Meric and **Punta Crossover** (52°41'S., 71°26'W.), 0.6 mile NW, a bank with depths of less than 2.5m, marked by kelp, extends 0.2 mile offshore.

Quebrada Vives lies at the head of a bight, 0.5 mile N of Punta Crossover. A beacon stands 0.2 mile NW of the ravine.

Caleta de los Amigos is a small settlement on the E shore, 0.25 mile ENE of Punta Stokes.

Punta Wapshot (52°38'S., 71°30'W.), the NE entrance point of the N end of Canal Fitz Roy is precipitous and fairly high. It is located 1 mile NNW of Punta Bennet.

Directions.—Vessels from S steer to a position 2 miles E of Punta Hall and enter Canal Fitz Roy on a course of 331°.

This course should be steered until within 0.5 mile of Punta Titus, when course should be changed to the N and pass 0.2 mile E of that point.

Then keep in mid-channel, passing 0.2 mile E of Punta Arnott, keeping to the W side to clear Bajo Reynard.

When SW of Punta Reynard, and the bank has been cleared, course may be altered for the entrance to Angostura Santa Cruz, steering to pass 183m E of Punta Fenton.

A mid-channel course should then be steered through the narrows.

After passing Punta Turn, steer with the range beacons on Punta Meric bearing 343°, until about 0.3 mile off the front beacon, then steer 290° with Quebrada Uribe ahead.

Hold this course until about 0.1 mile off Quebrada Uribe, then steer for the beacon NW of Quebrada Vives, bearing 000°. When 0.3 mile S of this beacon, keep a mid-channel course to the N entrance.

Seno Skyring

8.93 Seno Skyring, which is bound by Isla Riesco on the S and the mainland of Chile on the N, is about 50 miles long E to W and has a width of 8 miles near its W end.

The sound is entered from the E through Canal Fitz Roy and from the W through Canal Gajardo, which connects the sound with Golfo Xaultegua.

The E part of the sound has moderate and regular depths, open shores, and is bordered by low and undulating land with few trees.

The W part of the sound is indented by many bays, inlets, and numerous islands. The shores are rocky and precipitous, the water deep, and the sounding irregular.

The land rises to lofty, rugged mountains enclosing narrow valleys or tortuous channels

8.94 Morro Hopper (52°36'S., 71°31'W.), 2.5 miles NNW of Punta Wapshot, is a black cliffy projection, in contrast to the neighboring coast, which is grassland.

From Punta Harvey, about 1.2 miles S, a reef extends 0.5 mile SW.

A rock, with a depth of less than 2m, lies 2.5 miles W of Morro Hopper.

Ensenada Lorca is formed between Morro Hopper and **Punta Isabella** (52°34'S., 71°44'W.), about 8 miles WNW in the NE corner of the sound.

Caleta Las Minas is entered between Punta Hurtada, 2.5 miles WNW of Punta Isabella, and Punta Julio (Punta Julia), 0.55 mile further WNW.

An anchorage, exposed to the prevailing wind, maybe taken in a depth of 14m, with Punta Julio bearing 320°, about 0.3 mile distant.

Cabo Graves (52°33'S., 71°56'W.) lies 3.75 miles WSW of Punta Julio. Shoal depths extend 1 mile E of the cape.

Puerto Altamirano (52°33'S., 71°59'W.), 2 miles W of Cabo Graves, is entered between Punta Malogro and Punta Eulogio, a high, treeless, yellowish-colored point.

Anchorage may be obtained in a depth of 17m, soft mud, 0.3 mile NW of Punta Adelina, located on the E side 0.25 mile NW of Punta Malogro.

Care should be taken to avoid the reefs which extend 0.5 mile SE of Punta Eulogio and 0.5 mile S of Punta Malogro.

Puerto Williams (52°32'S., 72°05'W.), 0.75 miles NW of Punta Eulogio, affords sheltered anchorage with good holding ground, in a depth of 12.8m, about 0.7 mile from the N shore.

Isla Juan, about 1 mile long in a N to S direction, lies off the peninsula that forms the E side of Puerto Williams.

A shoal, with a depth of 3.2m, lies close off the S extremity of the island.

Rocks fringe the W coast of the island up to a distance of about 0.1 mile.

8.95 Ensenada Ponsonby lies on the S shore of Seno Skyring, between Punta Bennet and Punta Roccallosa Este, 17 miles W.

The coast is low, with marshes and lagoons that in many places. The beaches are strewn with boulders.

Punta Elias (52°39'S., 71°33'W.) is located about 2 miles W of Punta Bennet. Punta Greive lies about 2 miles farther WSW.

A large white boulder stands on shore midway between these two points. Kelp extends 0.7 mile offshore between these two points.

Caleta Mina Elena (52°41'S., 71°54'W.) (World Port Index No. 14175) is located in the SW part of Ensenada Ponsonby, 12 miles SW of Punta Greive.

A pier extends 183m N from the shore. The pier was reported to be derelict.

Anchorage may be obtained in a depth of 9m, about 183m offshore.

Punta Roccallosa Este (52°38'S., 71°58'W.) is bare and light-colored, contrasting with the woods that surround it. It is the W extremity of Ensenada Ponsonby.

Punta Roccallosa Weste, 1 mile W of Punta Roccallosa Este, along with that point, form the most conspicuous projections on the S coast of Seno Skyring. Shoals extend 183m N from both points.

Caleta Lenka, 2 miles WSW of Punta Roccallosa Weste, affords good anchorage in 22m, sand and mud, and is sheltered from the prevailing winds. Two small islets mark the E limit of the cove.

Puerto Garay (52°39'S., 72°03'W.) is formed between a point on the W and a group of islets and islands on the N and E, close W of Caleta Lenka.

Grupo Guzman, 4 miles WNW of Punta Roccallosas Weste, consists of two large and several small islets. Roca Negra lies close N of the group. Roca Blanca lies close S of the group; both rocks are very distinctive.

Punta Adelaida (52°38'S., 72°08'W.) is the NW extremity of a large promontory, located 2.25 miles SW from Grupo Guzman.

Bahia Leon is entered between Punta Adelaida and Cabo Leon 2 miles SSW. It is deep but affords no shelter and is not recommended as an anchorage.

8.96 The configuration of the W part of Seno Skyring will best be understood by reference to the chart.

Caleta Jara is entered between **Punta Onofre** (52°32'S., 72°09'W.) and Punta Pinto, 2.25 miles WSW. It is free of kelp and the bottom is mud, but it is not a good anchorage as it is very open.

Bahia Pinto (52°32'S., 72°15'W.), entered W of Punta Pinto, is located on the N shore about 5.5 miles to the W of Isla Juan. Although protected, it is subject to strong winds from the S and SW.

Punta Laura, the S extremity of a peninsula, is situated 10 miles SW of Bahia Pinto.

Estuario La Pera, on the NW side of the peninsula, is entered between Punta Spoorer, 6 miles NW of Punta Laura, and Punta Marshal, 1 mile N.

There is good anchorage at the head of the bay in depths of from 15 to 30m, mud and sand, for vessels with local knowledge.

Estero Navarro (52°50'S., 72°39'W.) on the S side of Seno Skyring, 18 miles SW of Cabo Leon, is deep and sometimes freezes over. It and other inlets to the E are of no value to navigation.

Canal Gajardo (53°00'S., 72°57'W.) is the passage between the SW part of Seno Skyring and the NE part of Golfo Xaultegua. It is about 30 miles in length and has a width of 0.65 mile for the greater part of its length.

It is generally deep and clear, but about 15 miles from the N entrance it bends at a right angle to the SE and contracts to about 91m. This narrow is obstructed by large rocks, which leave a passage only 20.1m wide.

The depth here is not more than 2 to 3m, and the tidal currents which attain a rate of 8 knots, make navigation difficult and dangerous. In winter, ice accumulates here and is dragged away by the current.

Golfo Xaultegua

8.97 Golfo Xaultegua extends 23 miles E of Estrecho de Magallanes, between the N side of Peninsula Cordova and Peninsula Munoz Gamero.

It is entered between **Bahia Clift** (53°05'S., 73°20'W.) and Grupo Santa Ana, 2.5 miles S; the entrance is 1.5 miles wide.

The gulf is deep and clear of dangers except for a few points.

Most of these dangers are marked by kelp which is always visible. The bottom is mostly mud, but in the W and E ends there is also rock in places.

The mountains which surround this gulf are high and scarped, and approach nearly to the water's edge. They give good shelter to the bays and inlets from the prevailing W winds, but squalls descend into the valleys rendering some anchorages unsafe.

The tides in the gulf are regular and the range is small. In general, they produce no appreciable tidal currents except in some inlets.

Grupo Santa Ana (53°08'S., 73°17'W.) is comprised of five small islands, bare and of white granite, on the S side of the entrance to the gulf.

The islands are steep-to, and, so far as examined, appear to be free of dangers on the S and SW sides, but there are shoals off the NE side. The summit of Isla Santa Ana, the largest island, is 270m high, 1.75 miles NNE of Punta Habana.

Isla Pillolco, the W island, is 146m high, and Isla Lagartija, the N island, is 37m high.

8.98 Estuario Portaluppi is entered between **Punta Alfredo** (53°06'S., 73°10'W.), 6.5 miles ESE of Bahia Clift, and Punta Este, 0.75 mile farther E.

Grupo Soto lies 2 miles SW of Punta Alfredo; the passage between these islands and the land to the N is foul and should not be attempted. Grupo Arturo extends 1 mile S of Punta Este.

A mid-channel course should be maintained between Grupos Soto and Arturo, taking care to avoid the rocky bank extending ESE from Punta Alfredo.

Anchorage may be taken by vessels with local knowledge, at the head of the inlet in a depth of 25m. It is exposed to W squalls.

A number of islands and rocks lie 2 to 6 miles ENE of Grupo Arturo. From W to E they are Isla Anderson, Isla Esfinge, Isla Campamento, and Grupo Altamirano.

Puerto Guzman is situated on the N shore, 4.75 miles ENE of Estuario Portaluppi. Punta Quidora is located 1.25 miles E of Puerto Guzman. It forms the W entrance point of the S end of Canal Gajardo.

The S coast of Golfo Xaultegua has not been properly examined; it trends E from Punta Havannah, and, in general, is cliffy and fairly broken with sparse, stunted vegetation.

Surgidero Meteorito lies 3.5 miles ESE of Punta Havannah, and **Punta Oberreuter** (53°11'S., 73°06'W.) lies 5 miles E of Surgidero Meteorito. Ensenada Tucapel and Ensenada Colocolo lie, respectively, 2 and 4 miles E of Punta Oberreuter.

Punta Vogel lies 5.25 miles E of Punta Oberreuter, and taken together with the islets NW, is the most salient point of the S coast.

8.99 **Puerto Bobillier** (53°12'S., 72°55'W.), 2 miles SE of Punta Vogel, affords good anchorage inside the entrance points in about 30m, mud.

Estuario Perez de Arce, located in the SE extremity of the gulf, is entered 4 miles ESE of Punta Vogel.

The head of the gulf is entered between Punta Fronton, the N entrance point of Estuario Perez de Arce, and Punta Hope, 2 miles N. It extends 6 miles E and divides into several small arms. Below-water rocks lie up to 0.5 mile off Punta Hope.

The coast between Punta Hope and **Punta Spoerer** (53°07'S., 72°59'W.), 5.5 miles NW, is high and cliffy. There are shoals and rocks extending up to 0.75 mile off this coast, making it necessary to give them a wide berth.

The S entrance to Canal Gajardo is between Punta Spoerer and Punta Quidora, 2 miles N, in the NE corner of Golfo Xaultegua.

Puerto Gomez (52°59'S., 72°58'W.), located on the W side of Canal Gajardo, about 6 miles within the S entrance, is well sheltered and easy of access.

The port offers anchorage to vessels up to 150m in length in a depth of 18.3m, hard mud.